NATIONALISED INDUSTRIES REVIEWED

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MODERN TRANSPORT

"THE TIMES" OF THE TRANSPORT WORLD

PUBLIC WORKS EXHIBITION

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VOL. LXXX No. 2069 [*Registered at the G.P.O. as a newspaper*] LONDON, NOVEMBER 22, 1958 PRICE NINEPENCE

CURRENT TOPICS

The Essential Bus and Coach

HELD for some years in the autumn, the annual dinner of the Public Transport Association has become a major social event of the bus industry. This year the toast of the Association was proposed by Viscount Monckton, who referred happily to briefs received in earlier days from the railway companies in connection with the Railway Rates Tribunal and from bus and coach operators after licensing was established under the Road Traffic Act, 1930. He was delighted to meet old friends from those days in the P.T.A., which now included 142 operators with 30,000 vehicles at home and more overseas, as well as some 200 contractor members. Mr. T. Robert Williams, in the chair, mentioned in his response the disability of the bus and coach in respect of their greatest competitors, the private car and the motor cycle. There was no general speed limit for the private vehicle, whereas the public transport vehicles were limited throughout their journey to 30 m.p.h. The industry's vehicles were outstandingly safe both for reasons of good business and because of Government regulations and their drivers were professionals. In view of the new attitude to roads at the Ministry of Transport the rigid length limit of 30 ft. on vehicles seemed archaic. "Let us have vehicles of reasonable length—35 ft. or more," he pleaded. They also thought it unjust to be singled out as an industry for selective taxation on a primary raw commodity—fuel oil. It was quite clear that higher fares, curtailment of services and some complete withdrawals could be attributed to the fuel tax. Despite their handicaps success still lay in anticipating yesterday what the public needed tomorrow and getting it in service today if necessary. Mr. Williams also proposed "The Guests," coupled with the name of Mr. G. R. H. Nugent, Joint Parliamentary Secretary, Ministry of Transport, who drew some parallels between growth of car traffic and decline of public service facilities in the United States and what might happen here. He hoped we could learn from it. It was impossible for everybody to come in by car and fully effective public transport service was the only way to keep cities alive. They must work out a system to keep public transport attractive and able to carry the people—there could be no doubt of the essential part bus and coach services played.

Pipeline Possibilities

REVIEWING comprehensively both the history of pipelines and the ever-widening range of their application to modern requirements, Mr. A. C. Hartley in his paper "Transportation by Pipeline," which was presented on Monday to the Institute of Transport by Mr. Hector Walker in the regretted absence through illness of the author, indicated clearly the flexibility that could be achieved. Tapline, which was conceived in 1946 to transport Saudi Arabian oil from Abquiq to Sidon in the Eastern Mediterranean, a distance of 1,068 miles, has recently been equipped with four boosting stations sited in desert country in which there are neither inhabitants nor water. Construction of a normal pumping station would have involved building accommodation and pumping water supplies a long distance at quite a prohibitive cost. In the upshot unmanned and fully automatic stations were provided. The whole of the equipment is installed in vans—four to each unit—and these are mounted on fixed foundations when in use. It is, however, possible to tow them away on special trailers for maintenance and repair at a base depot. The original main pumping stations can shut down the boosting stations at any time by reducing pressure. Suction pressure, discharge pressure and other information, such as filtered air temperature of the auxiliaries, is transmitted automatically to base by radio. The conclusion of the author was that, despite periodic falling off in the demand for oil, there would nonetheless be ever-increasing calls for large pipeline projects and that these would cover very wide and interesting fields.

Railway Research by Computor

IT is perhaps insufficiently realised that railway research departments cover a wider field of experiment than those of any other industry. Since the days of Hackworth's Wylam test carriage in 1811, which solved the important problem of adhesion, their contribution to the progress of technology has been incalculable; it is no less vital now that the need for maximum efficiency in the use of materials and methods is paramount. As in many forms of research, much of the work is computational, with an increasing tendency towards problems in which the mathematics are either too complex or too lengthy to be performed by ordinary methods. To cope with this work, British Railways has now installed in the physics division of its research department at Derby, a £40,000 electronic digital computor which is unique in this country. The machine, an Elliott 402F type general purpose automatic binary computor with a medium-size memory, uses paper tape for its input and output data, and has the additional feature that floating point arithmetic can be used, giving greater accuracy in a far bigger range of numbers. Its speed is such that pairs of numbers each containing nine digits can be multiplied together at the rate of 300 a second, and although this will effect a tremendous saving of time and labour, an increased staff of mathematicians will now be needed to do the programming in order that the machine can be kept fully occupied. Initial projects include an investigation into the nature of bogie vibration, problems in the development of continuous braking, and the most economic methods of dealing with complex sets of wagon movements.

The Diesel Advances

UNCHANGED in major detail since its inception more than 30 years ago, the in-line jerk-type fuel-injection pump is at last giving ground, at least in the automotive and small industrial engine fields, to an instrument rather less costly in itself and substantially less demanding in its coupling mechanism and its demands on maintenance. References have been made in our columns from time to time during the past two years to the distributor-type pump under development by C.A.V., Limited, and some operators will already have had experience of it in service, particularly on David Brown and Massey-Ferguson tractors, Rootes light diesel vehicles, the Land-Rover and Perkins Four 99 and C305 diesel engines, on all of which it is now standard equipment. But only this week has C.A.V., Limited, released full details of the new unit, which we shall be publishing shortly. The full emergence from the development and testing stages and the commissioning of a new £1¼ million plant for its production are accomplished facts. Although the in-line pump has already been superseded elsewhere where the accepted standards of diesel-engine performance have been perhaps less exacting than with British engine and vehicle manufacturers, by whom the pre-eminent position of the British automotive diesel is jealously guarded, it has been no short-term or easy task to reach the stage where the new unit could be offered by this leading designer and manufacturer of injection equipment with confidence as an alternative to the highly developed in-line pump. That this stage has not only been reached but surpassed, for the C.A.V. DPA pump possesses a number of advantages in addition to its lower cost and complexity not capable of realisation in the in-line pump, is a tribute to the design and development and the production engineering staff of C.A.V.

Buffers and Couplings

WITH the railway modernisation programme and the prospect of higher speeds of operation of all freight trains because of the fitting of the continuous brake, buffing and coupling gear have come in for a good deal of investigation and research. Among firms which have worked on the problem the Dowty group is prominent; its association with hydraulic aircraft landing gear and the subsequent development of a hydraulic pitprop led naturally to a hydraulic buffer design. Recently we were enabled to visit the company's test ground at Ashchurch in Gloucestershire and see a wagon so equipped hit a terminal buffer stop at 16 m.p.h. without damage. With orthodox buffers replacing the hydraulic ones the wagon was then shunted into a 70-ton concrete block at 14 m.p.h. with spectacular results, causing rail damage and breaking all four axleboxes, while the load burst the end out of the wagon. Another project is the automatic coupler shown at Battersea Wharf, a number of which is now in experimental B.R. service. This coupled and uncoupled successfully on curves down to 1½ chains radius. Test rigs on the site included those for coupler draft simulation, buffer cycling and buffer head wear. We shall pay further attention to this research at a later date.

The Snow Hill Banker

BY altering the layout of the Metropolitan Widened Lines in the Farringdon area, London Transport has been able to make a contribution to more efficient working of cross-London railway freight traffic. Longer freight trains of up to 50 wagons—against 30 previously—can now be worked up Snow Hill bank from the Eastern and London Midland Regions of British Railways to the Southern Region. Among the alterations is the removal of the banking locomotive spur from the Holborn Viaduct side of Farringdon Station to the Kings Cross side, in the former L.N.E.R. goods yard site. Apparatus has also been installed to enable the driver of a freight train requiring assistance up the gradient to Holborn Viaduct to exchange visual signals with the driver of the banking locomotive, thus ensuring that the crews of train and banking engines work in conjunction. The resiting of the locomotive spur has entailed alterations to the signalling controlled from the interlocking machine at Farringdon and to its control desk and illuminated diagram. Three new shunt signals of the externally illuminated disc type and four sets of points have been installed and one signal has been removed. An externally illuminated wagon target sign showing "14-30" has been fixed near Holborn Low Level down inner home signal No. 32 and a second sign reading "31-50" adjacent to Holborn Low Level down starting signal No. 36. These show the position at which the drivers of trains of various numbers of wagons should stop to pick up the banker.

Operating Method

TWO sign contact lines have been fixed to the tunnel wall handy to the driver of the train engine, who does not have to leave his cab. A similar set of wires has been placed where it can be reached by the driver of the banking locomotive at the rear of the train. The driver of the train engine gives one crow on the whistle when approaching Farringdon as an indication that banking assistance is required. The banking locomotive runs on to the rear of the train and, when ready to assist, its driver pinches the special wires fixed to the tunnel wall together. One minute after this has been done (or after a plunger has been pressed should the banking locomotive still be in Farringdon platform), a single-sided banking sign will be illuminated at the appropriate signal. When the signal is cleared the driver of the train engine pinches the wires on the tunnel wall by his side together. This action illuminates a number of other single- and double-sided "banking" signs at intervals along the track as an indication to the driver of the banking engine that the train is ready to proceed. One or more of these signs can be seen by the driver of the train engine, who can thus see that the appropriate indication has been given to the banking engine.

Victorian Railways Developments

ON the Victorian Railways £5,800,000 is to be spent on important new works and for purchasing and building new rolling stock. The money has been allotted by the Victorian Government from the Loan Fund, says the Minister of Transport, Sir Arthur Warner. About £600,000 will go towards suburban works, which must be completed before a start can be made on the construction of the proposed city underground railway. Progressive conversion to broad gauge and electrification of the 2 ft. 6 in. gauge Upper Ferntree Gully—Belgrave line will take £132,000. The allotment of money will also enable a new suburban station, Jacana, between Glenroy and Broadmeadows, to be completed by the end of the year. An investigation is being made to see which level crossings on the main north-eastern line can be eliminated when the new standard gauge line from Melbourne to Albury is constructed. A considerable sum will also be spent on improvements to rolling stock. Payments towards a further 10 T-class 900 h.p. diesel-electric locomotives will absorb £408,000. Delivery of five is expected by the end of the financial year. Out of the 22 air-conditioned saloon-type country cars on order, 13 will be completed by the end of the financial year, taking £250,000. Nearly £720,000 is set aside for constructing or rebuilding wagons in departmental workshops.

LEADING FEATURES IN THIS ISSUE

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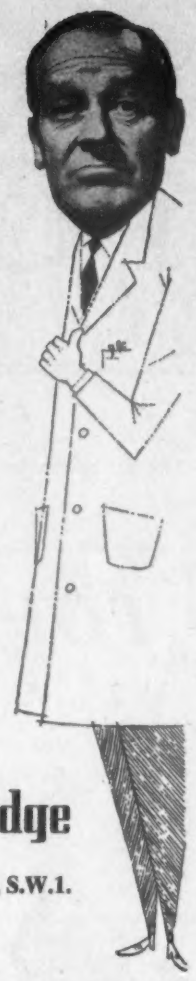
Diesels don't bother me . . .

Mind you, at one time diesels were the bane of my life. More than half our fleet are diesels and whenever an engine needed servicing we had to send injectors and pumps all over the place to have them repaired. Trucks would stand around for a week at a time getting in everybody's way. And when we did get the parts back it meant burning the midnight oil to catch up on lost time. So we decided to do our own diesel servicing right here.

First we wrote to Leslie Hartridge Ltd. for details of their service equipment—and, incidentally, found they had a very good training scheme for our mechanics. We picked the new Major because it has straight through variable speed without clutch or belt change and the extremely accurate overflow calibration system. And when we started to use it—well, that's when we really found out why seven out of ten diesels are serviced on Hartridge. Now we test distributor pumps and in-line pumps on a single machine, and, thanks to Electronic Phasing, save three-quarters of an hour on the job. We can also check our exhaust smoke with the new Hartridge Smokemeter.

We've easily covered our costs now and on top of that our trucks have been on the road for hundreds of extra hours. It's a different business altogether . . .



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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

We desire to call the attention of our readers to the fact that Russell Court, 3-16 Woburn Place, London, W.C.1, is our sole London address, and that no connection exists between this newspaper and any other publications bearing somewhat similar titles.

Nationalisation Under Scrutiny

PROPONENTS of the nationalisation of industry or public services have moved their ground so frequently within the last decade that would-be champions of private enterprise must sometimes despair of cornering such will-o'-the-wisp characters. The classic Socialist doctrine that the profit motive resulted in exploitation and inequitable distribution of income has been successively replaced by nationalisation programmes based putatively on, first, the basic industries, because they were of primary importance to the national economy; then it was the inefficient industries, or those with monopolistic tendencies, or bad labour relations; most recently the shadow has fallen on those which are "failing the nation" and the acquisition by the State of the equities in such undertakings is also proposed. Yet it is probably correct to assume that the underlying motive is still hostility to the profit motive and the special report on nationalisation recently issued by the Federation of British Industries has done well to trace the record of those industries which have come under public control and then to contrast the merits of free and public enterprise. The report cannot be accused of developing its inevitable conclusions with undue emphasis and, in fact, it is prepared to see a status quo, that is, neither more nor less nationalisation than we know it today. It enters a firm objection to the threatened renationalisation of steel and long-distance road haulage.

Ill-Defined Functions

SUMMARISING the effects of nationalisation the authors of the report say that it makes efficiency elusive by extending and entrenching monopoly; by subjecting it to political control; and by removing the only reliable yardstick—profitability. The report insists that efficiency must be measured in empirical terms—by success or failure in a competitive market—rather than by reference to statistical units, such as net ton-miles per train engine-hour in the case of British Railways. The incorporation in the statute establishing the British Transport Commission of such vague expressions as "adequate," "co-ordinated," "efficiency of operation" and "the needs of the public," to define its functions, is likewise of no value in enhancing efficiency because they are incapable of precise definition. However, the obligation to operate efficiently was only one of those generally laid upon the statutory corporations. They have also to charge prices such as will produce a revenue sufficient to meet outgoings taking one year with another. There are two possible defects seen in this approach: one, that costs may get out of hand or prices be allowed to remain at too low a level, and the other, arising out of this, that insufficient provision is made for depreciation. Of the latter the authors say that any prudently run business must somehow provide for the replacement of assets at a realistic figure—not one which is of little more than historic interest. Judged by this test they consider that taken together the public corporations have fallen short of their true depreciation requirements of £2,592 million by no less than £1,102 million.

Financial Discipline

NONE of the public corporations, in fact, has discharged in full the financial obligation laid upon it by Parliament, and only gas and electricity have come near to it. Failure to cover costs, the report concedes, may be due to insistence by the Government of the day on postponement of increases which the industry has from time to time proposed and if in transport it is not yet apparent how the deficits will be extinguished none will contest the conclusion that the user is at present buying transport at less than cost. Costs are considered to have been too high in the past because of remote or ineffective control which is accompanied by a lessened personal responsibility by those immediately concerned with the employment of facilities; because of political and other considerations it has been thought preferable to purchase industrial peace at the price of higher labour costs; the high cost of supplying products such as branch line railway services has been insufficiently regarded; taking one year with another for accounting purposes has removed the salutary fear, important in private industry, of showing an accounting loss even in a single year. In the absence of effective costs control it is impossible to maintain an attractive price level. It is, of course, to this latter end that the railway modernisation programme is directed; the Minister of Transport last week crystallised what this part of the report might indeed have said of the railways—"it was a pity that so much time was spent on nationalisation and not enough on modernisation."

The Test of Competition

AS to whether the nationalised industries have or have not been unduly favoured vis-à-vis private industry in the field of investment is a matter, the authors feel, on which it is difficult to be dogmatic in the absence of a positive criterion, but they concede that the railways have received less than a proportionate share of the capital made available to the nationalised industries. This is in sharp contrast to the Socialist belief that, with nationalisation, decisions on capital investment are in safe hands. Whether the capital sunk in State enterprises could have been used more productively in other directions is also a moot point. Judged by the market test it looks on a short-term view as though capital invested in the railways would have yielded a better return in other forms of transport, but the report is silent on this aspect. In the free enterprise world all these problems—costs, prices, investment and the rest—are solved by the market test. The market keeps prices low because the consumer prefers the low-cost producer to others. Accordingly the inherent features of private enterprise are flexibility, adaptability and constant pressure for innovation. Technical change always threatens to overthrow monopoly and political power may be used to thwart this adverse effect on a public body. How does transport, a sphere in which the B.T.C. has no monopoly, measure up to these concepts? The report says of industry generally that it is "the vigour of competition, not the number of competitors, that matters." Transport has both qualities of competition, some people would think, in superabundance. The public sector, and especially the railways, has shown itself aware of the need for profound technical change in the direction of concentration upon the tasks for which the railways are best suited and in the development of door-to-door transits. The crucial task remains—to ensure that the economies achieved with modernisation are not periodically wiped out by increases in labour or other costs, nor minimised by a continual shrinkage in traffic.

Forthcoming Events

November 22.—Omnibus Society (Northern). Paper by Mr. C. R. MacLeod, "Fares Please." At Y.M.C.A., Newcastle upon Tyne. 6.30 p.m.
Light Railway Transport League. Annual general meeting (2.30 p.m.) and 21st anniversary dinner (7 p.m.). At Windsor Hotel, Lancaster Gate, W.2.

November 24.—Institute of Transport (Berks, Bucks and Oxon). Paper by Mr. J. R. Hammond, "Modernisation in the Western Region of British Railways." At 32 Thorn Street, Reading. 7 p.m.
Institution of Railway Signal Engineers (Bristol). Paper by Mr. H. J. N. Riddle, "Earth Leakage Detectors." At Bristol Temple Meads Station. 6 p.m.

November 25.—Institute of Transport (Leeds G. and S.). Paper by Mr. D. B. Binns, "The Future of Rail Passenger Transport." At Offices of Leeds City Transport, Swinegate, Leeds 1. 7 p.m.
Institution of Mechanical Engineers (Automobile). Discussion, "Accessibility in Vehicle Design." At 1 Birdcage Walk, S.W.1. 6 p.m.
Institution of Civil Engineers. Paper by Mr. J. I. Whitehead "A Study of Traffic Flow, Its Seasonal Variation, and Relation to Traffic Capacity Standards, with Special Reference to parts of Dorset." At Great George Street, S.W.1. 5.30 p.m.
Railway Correspondence and Travel Society (East Midlands). Paper by Mr. J. J. Foreman, "Locomotive and Railway Working in North Lincs." At N.C.S. Guild Room, Toll Street, Nottingham. 7.30 p.m.

November 26.—Institute of Transport (Humberside). Annual dinner. At Guildhall, Kingston-upon-Hull. 7 for 7.15 p.m.
Institute of Transport (Visual Aids). Paper by Mr. J. G. Wardrop, "Traffic Congestion and its Cost." At 80 Portland Place, W.1. 6.15 p.m.
Railway Students Association. Paper by Mr. E. Flaxman, "Research and Development in the Handling of Freight Traffic." At London School of Economics, Houghton Street, W.C.2. 6.15 p.m.
Light Railway Transport League. Paper, "Isle of Man Transport." At Rubislaw Park, Aberdeen. 7.30 p.m.

November 27.—Industrial Transport Association. Annual dinner. At Cora Hotel, Upper Woburn Place, W.C.1. 6.30 for 7 p.m.
Institute of Transport (South West Lancs). Papers by graduates and students. At Town Hall, Warrington.

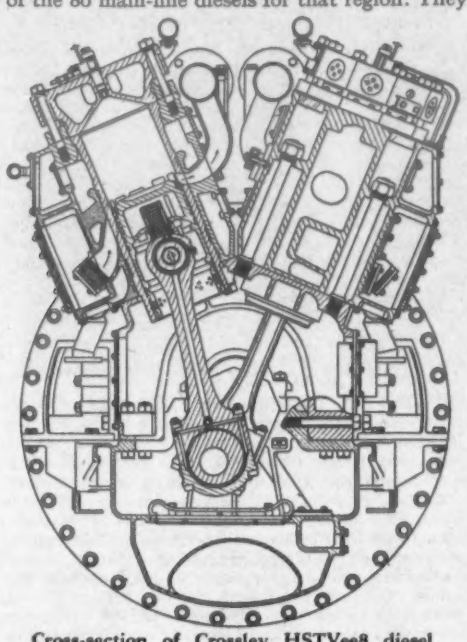
November 28.—Institute of Transport (Sussex). Annual dinner. At Bedford Hotel, Brighton. 6.45 p.m.

TEN-WHEELED DIESEL LOCOMOTIVE

Metrovick-Crossley Units on L.M. Region

1,200 H.P. AND 50,000-LB. TRACTIVE EFFORT

A BATCH of 20 diesel-electric locomotives now being delivered to the London Midland Region of British Railways for service from Derby under the modernisation plan is the highest powered type so far available of the 80 main-line diesels for that region. They



Cross-section of Crossley HSTVee8 diesel engine

incorporate a Crossley two-stroke diesel engine and Metrovick electrical equipment and they are being delivered at the rate of one each month from the main contractor, Metropolitan-Vickers Electrical Co., Limited, the first, D5700, having gone into service in July. Another notable feature is the CoBo wheel arrangement, the five axles sharing the 97 tons weight in working order almost exactly equally. The mechanical parts are being built by Metropolitan-Vickers—Beyer Peacock, Limited, and cast-steel bogies are provided by English Steel Castings Corporation, Limited.

The design and construction of the locomotives are to the requirements of the British Transport Commission under the general direction of Messrs. R. C. Bond and S. B. Warder (formerly chief mechanical engineer and chief electrical engineer respectively of the British Railways Central Staff) and in collaboration with Mr. J. F. Harrison, formerly chief mechanical and electrical engineer of the London Midland Region. Aesthetic design has been carried out in consultation with Mr. Jack Howe, in association with Mr. Christian Barman (executive member of British Transport Commission Design Panel) and Metropolitan-Vickers industrial design engineers.

Up to three locomotives can be operated in multiple. Multiple-unit operation of these locomotives with others now being delivered under the B.T.C. modernisation scheme and fitted with electrical equipment by the General Electric Co., Limited, and Brush Traction, Limited, has been arranged by co-operation between the three companies, and will undoubtedly prove a valuable asset to the operating staff. The Crossley diesel engine is the only conventional engine of the two-stroke cycle type being supplied to British Railways under the modernisation scheme and will provide a basis for comparison with four-stroke cycle types.

One of the Metropolitan-Vickers—Crossley diesel-electric locomotives hauling a 14-coach test train at Wetherby

these basic requirements that have led to the adoption of the five-axle, five-motor design. On notch 10 full power is available between 4.3 and 61 m.p.h., this range being covered by control of generator excitation up to about 25 m.p.h. and by traction motor field weakening thereafter, and the equipment is within the continuous rating at all speeds from 13.5 m.p.h. to the maximum speed of 75 m.p.h.

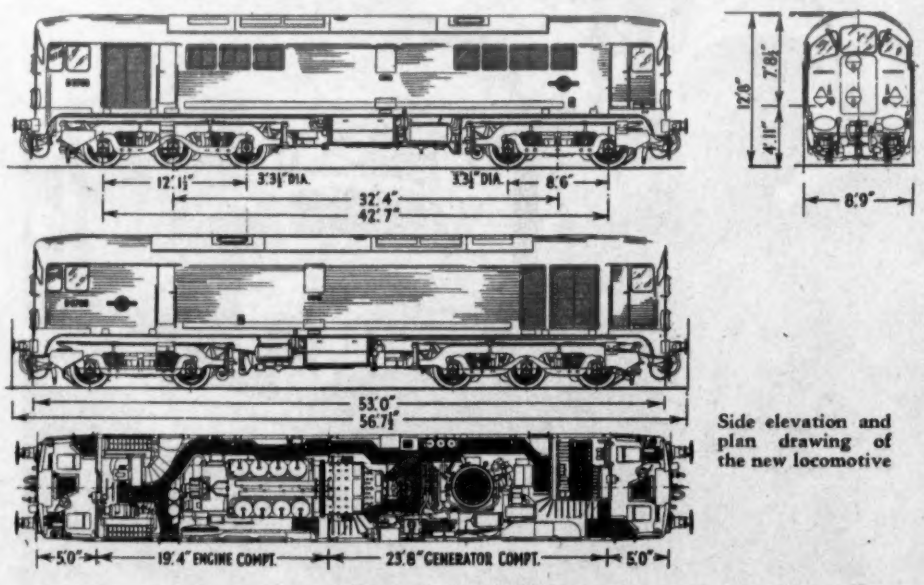
At speeds below the full power range the tractive effort is automatically limited to the maximum by a current limit relay, while above the range the tractive effort decreases in accordance with the inherent characteristic of the motor at sensibly constant voltage. Some indication of the hauling capability that these figures imply can be obtained from the fact that, on test runs before delivery, each single locomotive starts and accelerates to about 10 m.p.h. a 420-ton train (13 or 14 bogie vehicles) on a gradient of 1 in 42; the balancing speed on the level with this weight of train is 60 m.p.h.

Underframe and Body

The underframe, carlines, cantrail, floor and body sheeting form a complete welded structure designed to give maximum strength with minimum material. The underframe is made up largely of folded plate sections welded to form continuous longitudinal and transverse members with diagonal bracing, the transverse members being positioned at the load carrying points. Main fuel and boiler water tanks are incorporated within the underframe top and bottom plating. In sections not used for tankage the traction motor air ducts are also built in. In addition to the side buffers and centre screw coupling fitted initially, provision is made for the replacement of these items by a central automatic coupler at some future date. Among the special provisions for lifting and jacking of the locomotive in the event of derailment is the facility for using a single rocking jack at the centre of the underframe.

The body is divided by transverse bulkheads into four main compartments, namely, two driving cabs, an engine and radiator compartment, and a generator and boiler compartment, the upper portion of the bulkhead between the latter two compartments being removable. Louvres are provided at the various air intake positions, and where access is necessary these take the form of doors. Panel-type Air-Maze filters are built into the engine air intake duct. Sections of the roof are easily detachable for removal of the power unit, boiler, and auxiliary machines, while a number of smaller panels is provided for access to engine cylinder heads, fuel pumps and boiler fire tubes. Ventilators of generous proportions are fitted to the roof of the engine compartment. Entrance doors are arranged on the assistant's side of each cab and, near to the cab bulkheads, on the opposite side in the engine and generator compartments. End doors conceal the flexible gangway connection used when locomotives are operating in multiple. Particular attention has been paid to cleanliness of the engine-room floor, which is arranged so that any spillage of fuel oil or water drains into a tank

(*Continued on page 9*)



Side elevation and plan drawing of the new locomotive

LEADING PARTICULARS

Total weight in working order	97 tons	Diesel engine continuously rated h.p.	1,200 h.p. at 625 r.p.m.
Length overall	56 ft. 7½ in.	Power absorbed by auxiliaries	60 h.p.
Total wheelbase	42 ft. 7 in.	Maximum tractive effort at rail	50,000 lb.
Bogie wheelbase	12 ft. 1½ in. (Co) and 8 ft. 6 in. (Bo)	Continuous tractive effort at rail	25,000 lb. at 13.5 m.p.h.
Distance between pivot centres	32 ft. 4 in.	Maximum service speed	75 m.p.h.
Width overall	9 ft. 2½ in.	Minimum curve radius	3½ chains
Height overall	12 ft. 8½ in.	Fuel oil capacity (engine and boiler)	510 gallons
Wheel diameter	39½ in.	Water capacity for boiler	600 gallons
Type of bogie	Cast steel with swing bolster	Steam capacity for boiler	1,500 lb. an hour
Traction motor gear ratio	15 to 67	Brakes	Metcalfe-Oerlikon equipment for compressed air on locomotive and vacuum on train
Diesel engine	Crossley HSTVee8		

Performance

The maximum tractive effort is 50,000 lb., and the continuous tractive effort is 25,000 lb. It is

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First with Lightweight Diesel Trains incorporating the original 125 b.h.p. diesel power unit, B.U.T. then provided 150 b.h.p. and 200 b.h.p. engines. In 1957 the 230 b.h.p. unit was developed to provide a better power for weight ratio and now even better performance is offered with this 275 b.h.p. engine. In the forefront of rail traction with the improved railcar and railbus power units and controls, B.U.T. confidently forecast greater popularity for this new economical power unit for rail traction.
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NORMALLY ASPIRATED
Max. power—275 b.h.p. at 1,900 r.p.m.
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Max. power—360 b.h.p. at 1,900 r.p.m.
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LORRY—BUS—COACH

Bus Wages Policy Discussed

CO-ORDINATION on a national basis of a policy for the wages and conditions of busmen was discussed on November 18 at a conference in London called by the Transport and General Workers Union and attended by representatives of all sections of the road passenger transport workers save the Central area busmen of London Transport. This abstention was largely in protest against alleged reluctance of the union leaders to support proposed resistance to service cuts due for introduction on November 26. While there is general support for the formulation of basic wages policy, there seems to be at least one cross-current in the shape of the parochial attitude of the London men which may delay agreement being reached. The next step is for the general principles discussed on Tuesday to be put to the membership for detailed consideration and, thereafter, for another national conference to be held. The London Country busmen, with some support from the trolleybus men, seem also to have ground their own axe on the subject of provincial busmen being awarded 7s. as against the 5s. of their award, but ultimately to have agreed to remain in the meeting. If co-ordination of policy is accepted the next task will be to work out its application in practice. The present procedure for submitting claims would almost certainly be retained. Mr. H. R. Nicholas, the assistant general secretary of T. and G.W.U., is said to have advised the conference that reasonable differentials should be agreed on a firm basis and that in future wage demands from all sections should be submitted simultaneously.

Scottish Burghs and Bus Powers

THE Convention of Royal Burghs in Scotland has refused a request by Leven Burgh in Fife for legislation to allow small burghs to operate their own bus services. The Convention pointed out that there was no evidence that any major demand exists among small burghs for such powers.

Lisson Grove to Have Bus Service

DIVERSION of buses to entirely new routes in Central London is rare, but with the introduction of the second stage of the London Transport economy service cuts on November 26 the opportunity is being taken to divert bus route 59A, which runs between West Hampstead and Thornton Heath, via Lisson Grove and Rossmore Road in Marylebone, instead of via Lord's. This route will in future run Monday-Friday only, however. It is a great many years since Lisson Grove had a bus service.

Tees-side Board Appeal

AT a Ministry of Transport inquiry at Middlesbrough into an appeal by the Tees-side Railless Traction Board against the rejection by the Northern area Traffic Commissioners of an application to run new services to the Redcar Road estate and Teesville estates at Eston, the Commissioners were accused of being "unjust" towards the Traction Board. Mr. E. C. Parr, representing the Board, said they had turned down the scheme on the grounds that the time was not ripe for a new service, but had suggested that the Board and United Automobile Services, Limited, could divert existing routes to cater for the estates. Mr. Parr said that hitherto the "United" had shown no interest in the estates, but now with the approval of the Commissioners, United had diverted a route to the Redcar Road estate and competition had now arisen on a route where the Traction Board had previously been the sole operator.

Venues for R.H.A. Conference

NEXT year the annual conference of the Road Haulage Association is to be at Bournemouth, on October 26-28, a little later than has been customary in recent years. Because of the very large attendance at the conference banquet it seems that venues for future conferences will be restricted in coming years to possibly only two or three conference centres throughout the country. The R.H.A. appetite for meals on the grand scale appears voracious; next year the luncheon which normally takes place on the day of the annual general meeting (on May 20) will be replaced by a banquet.

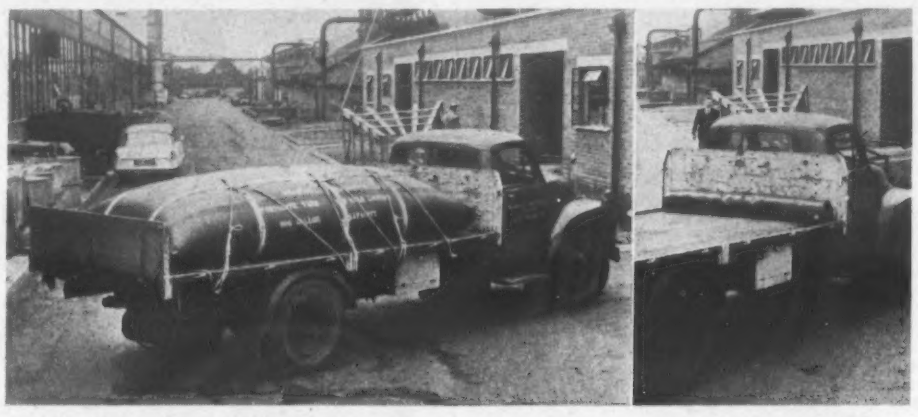
R.H.A. Publicity Campaign

IT now appears likely that the R.H.A. advertising and publicity campaign will not commence before March 1 next year. The proposal, to be considered by the executive committee of the Association next week, is that there should then be a basic scheme, for which funds are already available (£40,000 has so far been subscribed towards the £100,000 target) and two supplementary schemes, to be commenced at a suitable juncture. These might be used to intensify the main campaign, presumably when sufficient subscriptions are received. It is proposed to confine advertising to newspapers and other media with better-than-average class readership.

The R.H.A. is now engaged on two sample surveys with the object of obtaining some reasonably adequate statistics relating to the industry. Use of some of the material already obtained has, however, resulted in a charge from British Road Services that invalid comparisons were made with that undertaking. One sample survey covers all classes of haulier in the Northern area, the other long-distance hauliers throughout the country. It was over-optimistic interpretation of information relating to the latter that provoked the B.R.S. rejoinder.

Fabric Tank Containers

NOTHING less than a revolution in the bulk transport of most liquids would seem to be signalised in the introduction by Marston Excelsior, Limited, Wolverhampton (a subsidiary of I.C.I.), of Portolite flexible container tanks, made from coated strong woven fabrics (see illustration). In them bulk liquids can be easily conveyed by normal road, rail or water transport; on the return journey the empty tank can be reduced to a small bundle and the full load space used for other cargo. Portolite tanks may be strapped on to the flat surface of an open-sided vehicle or placed within the walls of a vehicle with sides; the walls should, however, be strong enough to withstand the loads imposed by the contents of the tank. Maximum capacity will be possible in the latter case if a tank of the right proportion is chosen. Surge can be reduced to a minimum by ensuring that little or no air is allowed to enter the tank during filling. The tank is most stable when completely full; a partly filled tank should be suitably lashed.



A Portolite collapsible fabric tank container, capacity 800 gal., on a Bedford 5-tonner (see story). After delivery, the container may be stowed away as shown on the right

These tanks can be supplied with filling and emptying connections to meet customers' individual needs; the corner of the container is the most suitable place for the connection. They are normally filled on the vehicle itself or on the site. Before filling, the tank should be fully rolled up to expel air. After valves and pipe lines have been connected it should be rolled out completely. Filling can then proceed until the tank reaches a given height. The reverse procedure should be followed for emptying. The method of cleaning depends on the contents of the tank. Steam and detergents may be safely used, while in some cases a second fitting may help to dispose effectively of steam and condensate. Due to widely differing requirements, the fabric used will be governed by contents. These may include petrols, mineral oils, vegetable oils, water, latex, chemical salt solutions, alcohols, detergents, molasses, alkaline solutions, ketones, esters, dilute acids and fruit juices. The cost of the 750-800 gal. tank illustrated on this page would be about £150.

One Solution of Fuel Tax Problem

IN its first year of operation the Ceylon Transport Board expects a loss of Rs.6,700,000. The losses for the first seven months of the year, up to September, amounted to Rs.5,508,000 and further losses are anticipated in the last quarter of the year. The Board is now reported to be negotiating with the Treasury regarding the Rs.3 million which it owes the Government in respect of diesel fuel tax. If the Treasury agrees to the Board's proposal to write off this sum, its losses for the year would be reduced accordingly.

New R.H.A. Long-Distance Guide

A SECOND edition of the directory of long-distance hauliers published by the Road Haulage Association is being sent out to members this week. Primarily intended to encourage interworking between members, it is available also to traders, price 2s. 6d. per copy. The total of addresses, some 435, in the new edition is little more than half that in the first edition as steps have been taken to remove operators who were not properly described as long-distance hauliers. Twenty clearing house members (who have signed the long-distance hauliers' group code of conduct) are listed separately. Also available to members are supplies of a vehicle report card, for posting ahead of the arrival of vehicles in order to secure return loading.

More Motorway Coach Services

ALREADY, faster journeys by coach are envisaged following the opening of the Preston by-pass in December. Ribble and Standerwick have made application to the Traffic Commissioners to use the by-pass as a regular route for two Standerwick express services between Colne and Morecambe and Bacup and Morecambe, as a route for duplicate vehicles on Ribble express services not requiring to call at Preston, as the authorised route for special holiday express services, and as the route for excursions which otherwise would pass through Preston. Standerwick will also seek authority to use the Birmingham—London motorway when it is opened in 1959. It is desired to use this motorway so that special timings can be arranged for duplicate vehicles operating services to London and not required to call at towns which the motorway will by pass. This would leave the scheduled services to operate as at present.

Bus and Coach Developments

Premier Travel, Limited, seeks to commence its Berden—Great Yarmouth Coach service at Langley.

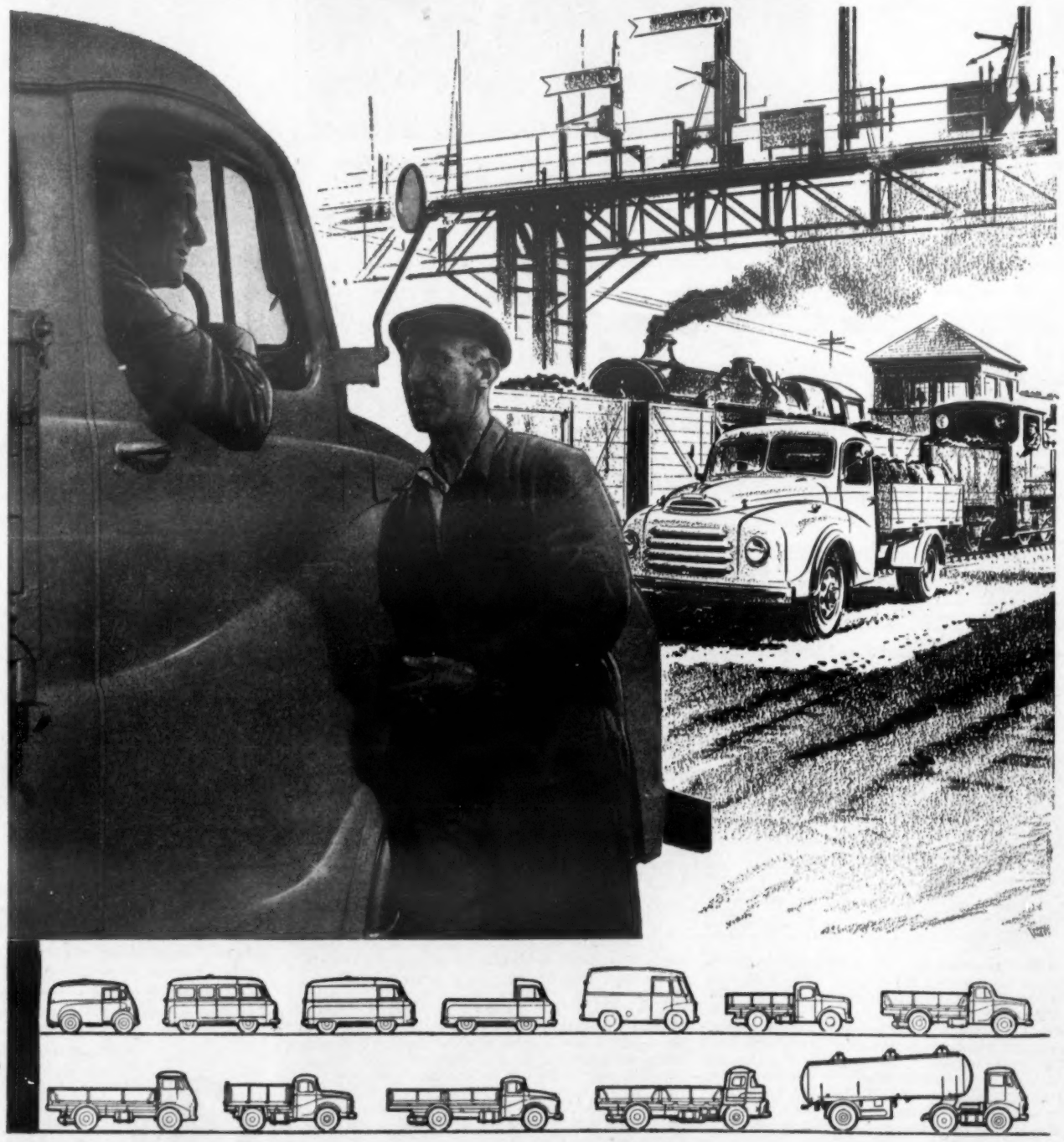
Snowdonia Coaches (Lloyd and Barrett) applies to extend its Cirencester—Bibary service to Quenington via Coln St. Aldwyns.

R. E. Wake, Sparkford, seeks the excursions and tours from Gillingham (Dorset) of J. O. and O. W. Withers.

West Yorkshire Road Car Co., Limited, and York Corporation propose a new service on weekdays between Kingsland Terrace (Leeman Road) and Stockton-on-the-Forest (Bar Lane).

Glasgow Corporation Transport Department on November 16 completed its programme for trolleybus operation. On that date tram route 12, Mount Florida—Paisley Road Toll—Linthouse, was replaced by trolleybus route 108, which it is intended to work with single-deck trolleybuses. Tram route 22 was replaced by bus route 54, which runs Crookston—Cadder (an extension of the tram route) and tram 32 by bus 55, Crookston—Springburn. King George V Bridge, Govan Road and Paisley Road are now free of trams.

that's why I'm a MORRIS man



Reliability . . . that's what counts in the coal delivery business. Twenty calls in one street, half-a-dozen round the corner—then back to the depot to re-load. Stop, start, stop, start—all day and every day and generally during the worst weather. Schedules like mine call for all-round toughness—and that means Morris, in *any* language.

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Europe's most comprehensive service

THE FULL RANGE

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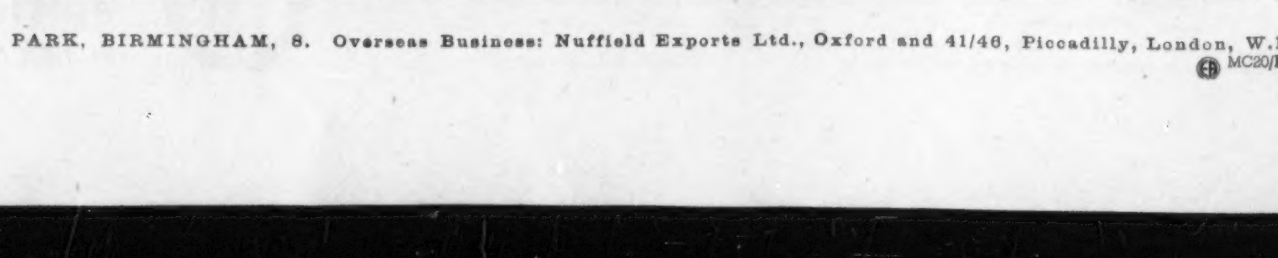
commercial vehicles



MORRIS COMMERCIAL CARS LTD., ADDERLEY PARK, BIRMINGHAM, 8. Overseas Business: Nuffield Exports Ltd., Oxford and 41/46, Piccadilly, London, W.1
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COMMERCIAL VEHICLE TEST

*Goggomobil 5-Cwt. Delivery Van**

TINY TWO-STROKE ENGINE PERFORMS REMARKABLY

BEFORE we enjoyed an exhilarating day out with the Goggomobil delivery van, the first examples of which have recently been imported into this country by Goggomobil, Limited, the United Kingdom concessionaire for the manufacturer, Hans Glas G.m.b.H., Dingolfing, Bavaria, we must confess to having had some doubts about the ability of the minute 293-cc. two-stroke engine to do much more than move its advertised 5-cwt. payload at a comparatively slow pace suitable for little more than local door-to-door deliveries. We were never more mistaken. The remarkable performance and economy shown by the vehicle carrying a full 5-cwt. load over our standard test route along the hilly Kent-Surrey borders made the reasons for the recent placing by the German Post Office of an order for 4,000 of these vans quite clear.

A left-hand-drive Goggomobil van with passenger seat folded for side access to the load; right, on the weighbridge the empty running weight recorded was 10¼ cwt.

Developed From Successful Small Car

Although a leading European manufacturer of agricultural machinery, the Glas concern is a comparative newcomer to road vehicle production, having started with scooters soon after the war and introduced the successful Goggomobil miniature car to the German market in 1955. Within two years of its introduction, over 75,000 cars had been produced of which more than 35,000 had been exported. The Goggomobil van employs the same general base as the car, with a difference only in gear ratio to meet the greater weight, which comprises a tubular backbone and sheet-steel punt, stiffened where necessary for suspension mountings, and the running units. The engine, gearbox and differential form a compact single unit which is mounted at the rear end of the tubular member. The differential sunwheel shafts terminate just outside the casing in universal joints, which drive the independently sprung rear wheels through half shafts.

The half shafts are solid with the hubs and form an essential part of the rear suspension, which is completed by coil spring-telescopic damper units and splayed trailing arms. Front suspension is also independent, with similar coaxial spring-damper units, swinging half axles and radius arms, and steering is by rack-and-pinion gear. The body of welded steel is lined with hardboard and is fitted with sliding side doors and hinged rear doors and has no opening windows. Ventilation is obtained through an adjustable vent above the windscreen and when necessary the sliding doors clip in the open position. Heating is arranged by bleeding off hot air from the engine cooling duct, through an adjustable valve.

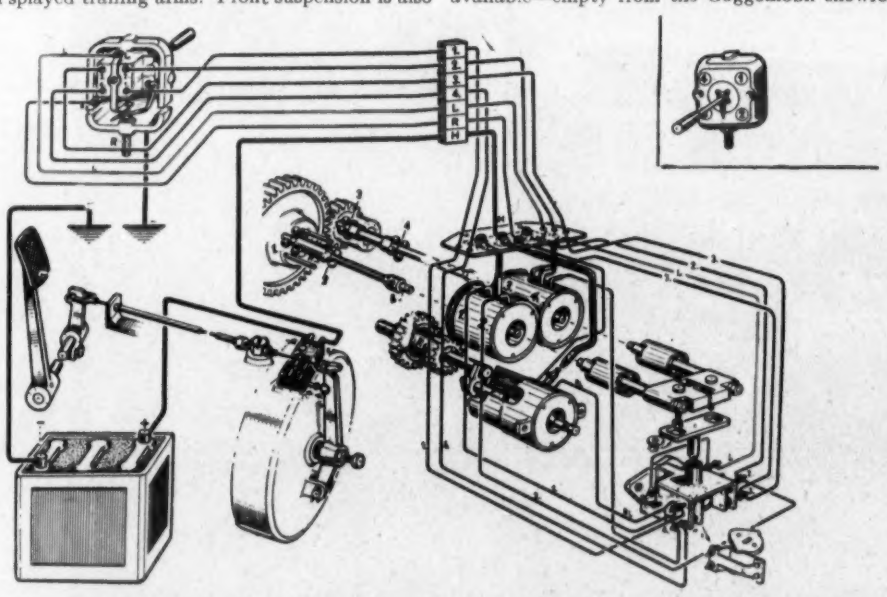
The van body has a floor stepped up over the engine compartment, restricting the raised area adjacent to the rear doors to 3 ft. 3½ in. wide by 1 ft. 5½ in. fore and aft with a height of 3 ft. 1½ in. The main floor length between the step and the back of the seats is 2 ft. 7½ in. with a height of 4 ft. 7 in. Total loading area is just over 14 sq. ft. and total load capacity is 57 cu. ft. The passenger's seat can be quickly folded into a compact unit alongside the driver to give access to the load from the side door and there is provision for fitting a strong bulkhead immediately behind the driver's seat to prevent a high load from sliding forward. Standard equipment includes twin windscreen wipers, two outside mirrors, two interior lights, front and rear bumpers and heater but at the United Kingdom price inclusive of tax of £473 13s. 6d., the spare wheel is listed as an extra.

The power unit is the Glas parallel two-cylinder two-stroke engine of 293 cc. capacity, with petroil lubrication and cooled by ducted fan. A 392-cc. unit is interchangeable with the smaller engine but is not being offered at present in this country. The smaller engine has an output of 17 b.h.p. at 6,000 r.p.m. and a maximum of 17.4 lb/ft. torque. A Bing starter carburetter and Bosch 12-volt electrical system with coil ignition are fitted. The extremely interesting transmission employs a two-plate friction clutch and four-speed constant-mesh gearbox with electromagnetic preselective control. In the Getrag Selectromat gearbox all four forward ratios are indirect and are provided by four gears in constant mesh carried at each end of two hollow shafts. Inside the shafts are rods carrying ball clutches at each end and gears are engaged by the selected solenoid pulling its rod endwise which forces the balls up an inclined plane to lock the appropriate gear to its hollow shaft. Reverse is obtained by a sliding-pinion gear operated by a separate solenoid.

Impressive Performance

We collected the vehicle for test—a left-hand-drive version though right-hand control is also available—empty from the Goggomobil showroom in Kensington and were immediately impressed by the verve of the little engine and the simplicity of gearchanging. Final take-up of the clutch in starting from rest was a bit lumpy in this vehicle but this was explained by the fact that it was fitted with an earlier-type multiplate clutch. We were told that the current two-plate clutch eliminates this characteristic. Another feature which did not win our approval was the seat in which, despite an adjustable-rake backrest, it was impossible to be really comfortable. The main reason for this is that the seat is mounted over the 4½-gal. petroil tank (no contents gauge but fitted with reserve tap) and the seat is hinged to provide access to the

(*Continued on page 12*)



Diagrammatic presentation of mechanical and electrical four-speed preselective transmission components. Inset is the gear selector switch the back of which is seen top left

* No. 456 in the MODERN TRANSPORT series of road tests.

TEST RESULTS AT A GLANCE

Vehicle Details

MAKER: Hans Glas G.m.b.H., Dingolfing, Germany. British concessionaire, Goggomobil, Limited, 93-95 Old Brompton Road, London, S.W.7.

TYPE: 5-cwt. van.

ENGINE: Air-cooled parallel twin-cylinder two-stroke petrol, mounted at rear; bore 2¼ in. (58 mm.), stroke 2⅞ in. (56 mm.), capacity 18 cu. in. (293 cc.); compression ratio 6 to 1, 17 b.h.p. at 6,000 r.p.m.

TRANSMISSION: **Clutch,** cable-operated oil-immersed two-plate with gear-operating switch; **gearbox,** four-speed constant mesh with electromagnetic operating clutches; **rear axle,** bevel differential integral with gearbox driving hubs mounted on trailing arms through half shafts with universals at inner ends only.

BRAKES: Hydraulically operated on four wheels providing 63 sq. in. (405 sq. cm.) total lining area. Handbrake cable to rear shoes.

TYRES: 4·80-10.

WHEELBASE: 70·8 in. (1·8 m.).

WEIGHT: Van complete in kerb trim 10¼ cwt. (520·7 kg.).

PRICE: £427, plus £46 13s. 6d. U.K. tax.

Test Results

ROUTE: MODERN TRANSPORT standard route in Kent and Surrey with London addition.
CONDITIONS: Fine and cool.
RUNNING WEIGHT: 15¼ cwt. (774·7 kg.) plus driver.
PAYLOAD: 5 cwt. (254 kg.).
FUEL CONSUMPTION: Over 15-mile standard out-and-back route continuous running 53·2 m.p.g. (18·8 km. per litre) at 29 m.p.h. average speed.
GROSS TON/M.P.G.: 45·2 (17 tonnes/km./litre).
PAYLOAD TON/M.P.G.: 13·3 (4·8 tonnes/km./litre).
MAXIMUM GRADIENT CLIMBED: 1 in 5 (21 per cent).
TURNING CIRCLE: 25 ft. (7·6 m.).
ADJUSTMENTS DURING TEST: None.
ACCELERATION:
Averages of four runs each, through gears:
0-20 m.p.h. 6·1 sec.
0-30 m.p.h. 13·3 sec.
In top gear:
10-20 m.p.h. 15 sec.
10-30 m.p.h. 33·7 sec.
BRAKING: Average measured distance in simulated emergency stops from 30 m.p.h. on good surfaces 39 ft. (11·9 m.), equivalent to 24·8 ft. per sec. per sec. or 0·77 g. overall deceleration. Don brakemeter 72-75 per cent. Handbrake only from 20 m.p.h. around 30 per cent Don meter.
ESTIMATED TOP SPEED: About 50 m.p.h. (80 k.p.h.).
OVERALL FUEL CONSUMPTION: For 85 miles of mainly hard driving, including 30 miles in London traffic and many stops in various tests, 47·7 m.p.g. (1,720 km. per 100 litres).

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Use an I.C.I. Degreasing Plant to give your vehicles a clean start.

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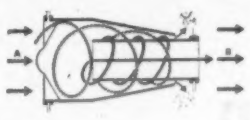

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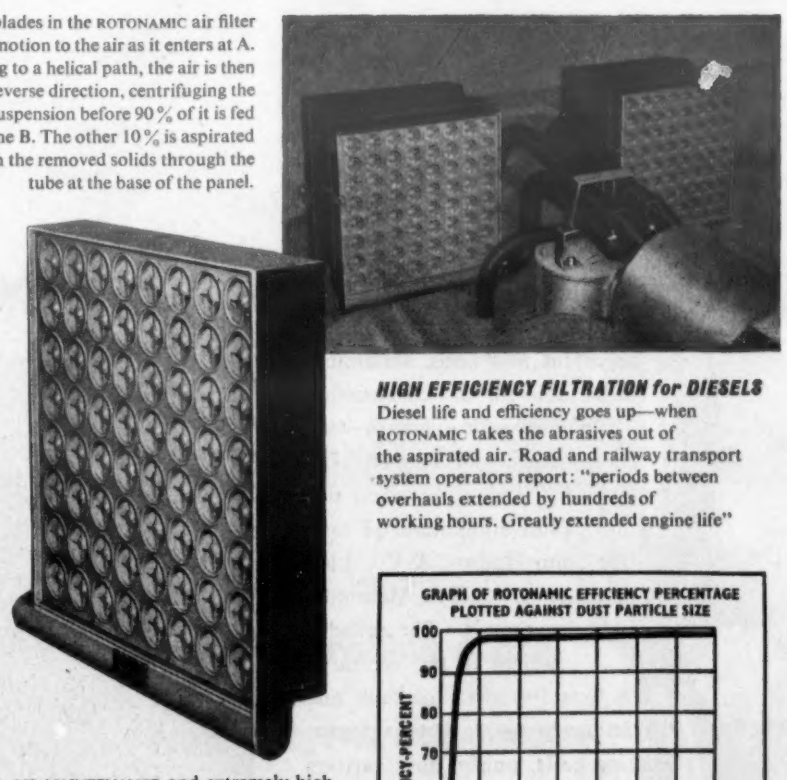
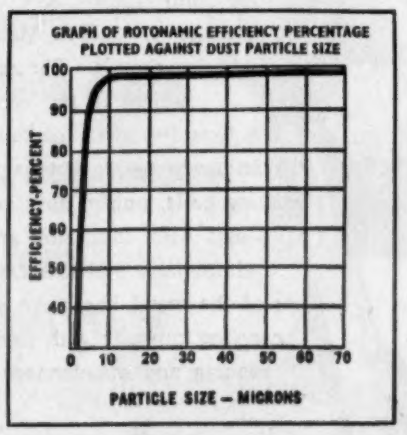
Static helical blades in the ROTONAMIC air filter give a whirling motion to the air as it enters at A. Still keeping to a helical path, the air is then induced to reverse direction, centrifuging the solids out of suspension before 90% of it is fed to the engine B. The other 10% is aspirated away with the removed solids through the tube at the base of the panel.



HIGH EFFICIENCY FILTRATION for DIESELS
Diesel life and efficiency goes up—when ROTONAMIC takes the abrasives out of the aspirated air. Road and railway transport system operators report: "periods between overhauls extended by hundreds of working hours. Greatly extended engine life"

NO MAINTENANCE and extremely high efficiency are the most important money-saving factors of ROTONAMIC air filters for diesels. Aspiration of dust particles can be provided by a simple extractor operated from the engine exhaust system. ROTONAMIC filters are made in England by INTERMIT LTD. Please write for leaflet FRC9.



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PUBLIC WORKS EXHIBITION

Widening Scope of Machine Aids

GREATER activity in roadbuilding in this country and the generally widening scope of machines in increasing the efficiency of public works and municipal services led to a bigger than ever Public Works and Municipal Services Congress and Exhibition this year. The seventh in the series since the war, the exhibition staged last week at Olympia featured the products and services of nearly 400 exhibitors and attracted a record number of visitors from home and overseas; it probably represented the most comprehensive display of machines and equipment designed for civil engineering and municipal work ever assembled under one roof anywhere in the world. At the concurrently held congress 22 papers were delivered covering a variety of subjects from water conservancy to public lighting.

Torque Converters and Turbochargers

Although the entirely new machines were not numerous, there were many that had been equipped with new units and equipment or otherwise improved. One of the most noticeable technical changes in mobile equipment was the number shown with torque-converter transmission. At the last exhibition two years ago there was scarcely a torque converter to be found but at the present show the majority of manufacturers of tractors, rollers, excavators and kindred machines had one or more examples on show or demonstration with torque-converter drive and all were prepared to extol its advantages in a variety of applications. Most of the torque converters used were of the hydrodynamic type, such as those produced by Brockhouse, Rolls-Royce and Self-Changing Gears, but there were also examples of the application of newly developed hydrostatic types, notably those of Dowty Equipment and W. G. Bagnall.

Another technical feature of the show was the much wider use of exhaust-gas turbocharging of the diesel engines of vehicles and plant on which the reduction of engine weight and bulk is a worthwhile pursuit. Apart from the half-dozen or so ranges of engines on which this feature is now regularly offered, Rotol had on display a range of turbochargers (based on American AiResearch design) to suit a variety of engine sizes. Rolls-Royce showed engines equipped with the Rotol unit as well as with Schwitzer machines (an American design produced in this country by Holset), a type which is also applied to larger Leyland-Albion engines. It is perhaps early days yet to find the British-designed B.S.A. turbocharger in production applications but no doubt we shall see more of this promising machine at future shows, as of the German-designed Simms-Eberspächer unit, which is now in production by Simms Motor Units, on engines of small to medium capacity.

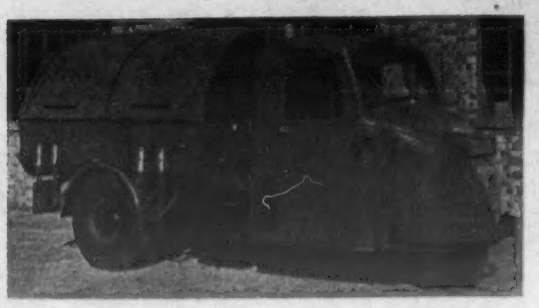
New Vehicles

A number of new and recently introduced municipal and works vehicles appeared at the show, with examples based on A.E.C., Bedford, Dennis, Foden, Karrier and Scammell chassis. The A.C.V. contribution was the redesigned 10 cu. yd. Dumptruk and a range of A.E.C. diesel engines, while Eagle Engineering 7, 10 and 12 cu. yd. tipping collector bodies mounted on Bedford J2 and J3 normal-control chassis were notable for their low loading line. The Dennis range included the Perkins diesel-engined Heron low-loading collector for 7 to 8 cu. yd. and a new 20 cu. yd. Tippax collector with four-man cab based on the heavy-duty Pax chassis. Ruston-Bucyrus showed a new 22-ton capacity mobile crane with 70-ft. boom and 20-ft. offset jib, the base for which was the new Foden FC20 chassis described in our last issue. On Foden's own stand was the massive 56,000-lb. capacity dumper featuring Rolls-Royce 300-b.h.p. turbocharged diesel engine and torque-converter drive.

The latest Karrier Bantam and Gamecock chassis, which can now incorporate the new Perkins underfloor diesel engine, were seen with Glover, Webb and Liversidge Dual-Tip refuse collectors from 12 to 25 cu. yd. capacity. A new role for the Scammell Scarab three-wheeled mechanical horse, which can be either diesel- or petrol-powered, was shown in the form of a 6 cu. yd. hydraulic-tipping refuse collector which, with a turning circle of less than 20 ft., will prove particularly useful in narrow streets and alleys. The improved Mountaineer 8 cu. yd. dumper with coil-spring front suspension was also shown and the Leyland group was further represented by examples from its range of diesel engines, two of which—350 and 680 cu. in. versions—were shown with Self-Changing Gears (Schneider licence) torque converters. Thornycroft was represented by one of the variety of types comprising the Big Ben range—a six-by-four chassis fitted with Thornycroft plastics cab and Telehoist 15.2 cu. yd. (struck) steel body and link tipping gear. The most powerful dumper at the show was a new 20 cu. yd. Aveling-Barford machine fitted with 400-b.h.p. Rolls-Royce diesel engine.

New machines exhibited by Ransomes and Rapier comprised two lorry-mounted mixers and a tilting agitator for premixed concrete also for lorry mounting. The mixers both have a mixed batch capacity of 3½ cu. yd. with built-in water tanks and the choice of separate Perkins diesel or power-take-off drive, while the agitator has 3 cu. yd. capacity and can be tilted by hand or power to feed a 180-deg. swivelling chute; all show evidence of thoughtful design for maximum time and labour saving. Under its new ownership by Short Brothers and Harland, the British Straddle Carrier Company gave its Mark 2 machine a first public showing. Equipped with a Perkins 62-b.h.p. L4 diesel engine and Eaton two-speed axle, the machine can pick up and carry a 20,000-lb. load under its belly at speeds up to 12 m.p.h.; with a 14,000-lb. load it can travel at 30 m.p.h. and it is fully equipped for use on public roads. Four-wheel steering with Marles integral servo assistance provide maximum manoeuvrability in confined spaces.

A most interesting newcomer to the tracked tractor field was a prototype machine produced by W. G. Bagnall—a manufacturer of note in another field. Designed by Mr. J. S. Burns and designated Bagnall-Burns BB90, the new tractor embodies a Meadows 4DC 420 diesel-engine and hydrostatic transmission comprising a pair of Lucas IP3000 hydraulic pumps driving two BB 7-cylinder radial hydraulic motors, one to each track. The combination provides a rated drawbar pull of 15,000 lb. and stepless variable speed from 0 to 7 m.p.h. in each direction, in a tractor weight of 8 tons. Control is extremely simple from an unusual sideways-facing seat, being effected (apart from engine control) by two levers, one for forward or reverse travel and one for steering without clutches or brakes through differential adjustment of the independent hydraulic drives to the tracks.



A new 6 cu. yd. collector based on Scammell Scarab chassis which can be either diesel or petrol powered

Weatherill 1¼ cu. yd. 12H hydraulic loading shovel and, right, four-wheel-drive Chaseside Loadmaster 3000 with 3 cu. yd. (10,000 lb.) scoop and torque-converter transmission. Both are new

Foden 18 cu. yd. (28 tons) dumper with Rolls-Royce 300-b.h.p. diesel and torque converter and transmission disc brake; right, Thornycroft six-by-four Big Ben with plastics cab and Telehoist 15 cu. yd. body and tipping gear

Fastest Crawler

With an operating speed of nearly 10 m.p.h. the Rolls-Royce-powered Vickers Vigor tracked tractor is claimed by its exhibitor, Jack Olding and Company, to be the fastest in its class in the world, while a 60,000-lb. drawbar pull is claimed for a new 150-b.h.p. Allis-Chalmers HD16 crawler tractor fitted with torque-converter transmission. A new industrial wheeled tractor (there is also an agricultural version) was introduced by British International Harvester Company in the tradition of the successful Bradford-built B250 machine. Designated B275, it has more power and weight than the 250, and should duplicate the success of the smaller machine, which is the best-selling

(*Continued on page 11*)

British Aluminium for Oil Tankers

Due to its chemical resistance, non-toxicity and lack of influence on colour and taste, aluminium is suitable for the construction of tankers to carry a wide variety of liquids. The A.P.V. Co. Ltd. constructed this 4,000 gallon aluminium oil tank for John Hudson & Co. Ltd., mounted on an A.E.C. Mammoth Major chassis. The unladen weight of the vehicle is 8 tons 19¾ cwt., the tank and its fittings weighing 2 tons 5 cwt. Heating coils, pump, hose carriers and Alfol insulation are also aluminium, and this extensive use of the metal has given greater carrying capacity with minimum running and maintenance costs.

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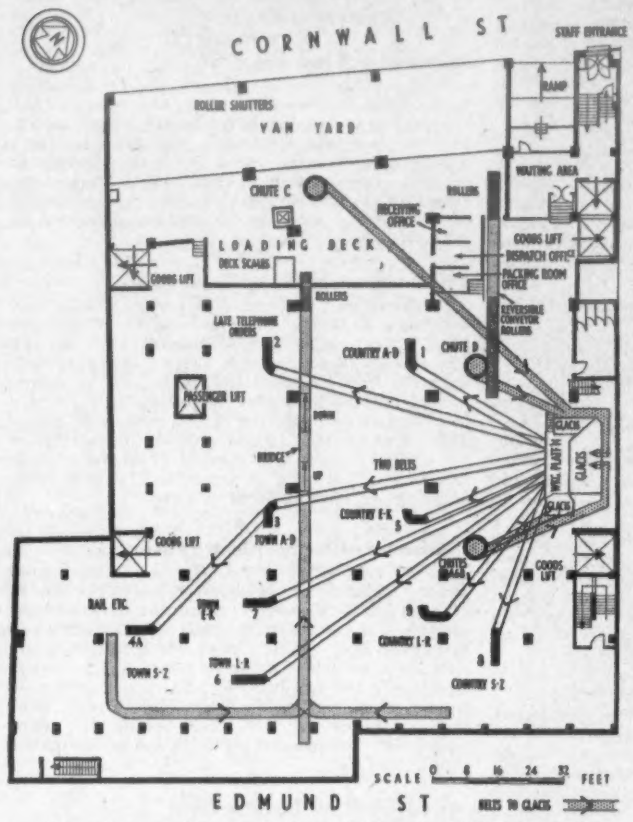
A MODERN DRAPERY WAREHOUSE

Conveyors to Packing and Dispatch Areas

CONFLICTING MOVEMENTS AVOIDED

IT is refreshing to find a large commercial undertaking so appreciative of the importance of transport that when designing new premises it makes the reception and dispatch arrangements the first consideration and plans the rest of the building round the transport section. This is what happened when the century-old wholesale drapery firm of Wilkinson and Riddell, Limited, Birmingham, decided to move from its congested site in Cherry Street, off Corporation Street. A suitable piece of land was found lying between Edmund Street and Cornwall Street, still close to the centre, but more easy of access than Cherry Street. The ground slopes down from Edmund Street and advantage has been taken of this in the construction of the 10-storey building. Goods are displayed in 24 departments on eight floors above street level. Each floor is approximately 160 ft. by 150 ft. Goods selected by customers on any floor can be placed after checking on one or other of four spiral chutes which convey them down to the basement dispatch floor.



Reception, packing and dispatch floor in Wilkinson and Riddell warehouse. Conveyor belts to and from the sorting glacis pass above the packing area, which is marked out for various destination groups

Received Traffic

The reception and dispatch deck, which is approached from Cornwall Street, can accommodate 12 vehicles and is well set back so that vehicles are completely under cover and clear of the street. Outwards and inwards sections are kept separate. There are two lifts operating off the deck itself, one being constructed with a 12-ft. high doorway so that lengthy carpets and similar awkward traffic can be easily handled. Behind the deck is the packing room, measuring 16,000 sq. ft., with two other lifts, one in each of the far corners, so that in all there are four lifts from the reception level.

The problem of avoiding conflicting movements of inwards and outwards traffic has been very ingeniously solved. Parcels, as they are made up at various counters on the upper floors, travel by short belt conveyors to chutes which all converge on to an elevated platform (the glacis, as Wilkinson and Riddell call it) on the packing floor. The glacis are 2 ft. wide and run at 180 ft. per min. at high level above the basement floor. The sorters stand on a platform 5 ft. high in front of the glacis. They sort the parcels to nine destinations by placing them on one or other of the distribution conveyors. These conveyors, which again are 2 ft. wide, deliver the parcels into bins in the nine assembly areas into which the basement floor is divided.

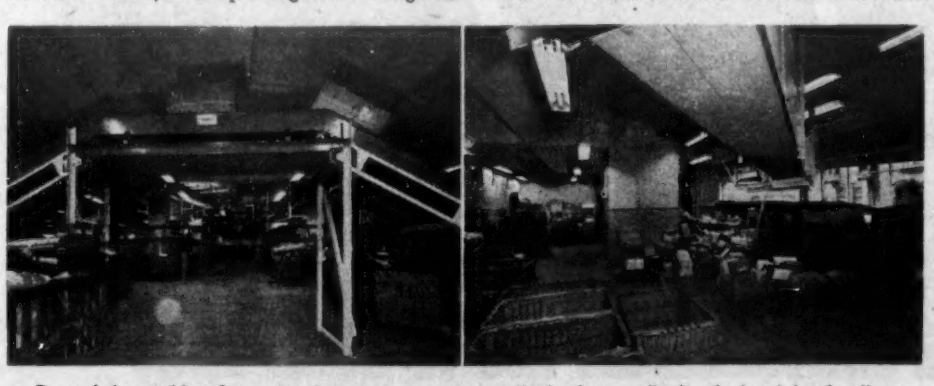
From these areas, those of the fully assembled orders which require further packing are fed to packers on a series of goods-outwards conveyors (2 ft. 6 in. wide, 60 ft. per min.); and are taken from the packers again by extensions of the same conveyor system to weighing stations and dispatch dock. A floor-level slat conveyor, 3 ft. wide, is provided for larger and heavier goods up to a maximum of 4 ft. by 3 ft. by 3 ft. weighing up to 3 cwt.; and this is reversible, thus serving both inward and outward traffic. The installation includes a comprehensive system of light rays and signal lights to avoid congestion and jamming. Thus, for instance, signal lights are provided at every chute loading point on every floor, so that staff are warned not to load unless the collecting conveyors in the basement are running.

Vast Daily Dispatch

Wilkinson and Riddell deliver in Birmingham and its environs with their own vans. These leave at 10.30 a.m. so dispatch staff can be economised by working on other parcels in the afternoon and being switched to local parcels next morning. To one side of the deck is an approach to an underground car park for customers' cars, with room for 70 vehicles. Here is a parcels office for those who take their goods away with them. It is an essential feature of the Wilkinson and Riddell organisation that all goods sold must go through the packing and dispatch organisation.

The company has nearly 10,000 customers, practically all retail shopkeepers, and on a busy day about 15,000 lines are sold; some 5,000 parcels may have to be made up, these perhaps being amalgamated to half that number in the final assembly. The administrative system to deal with this volume of business is an interesting combination of mechanical efficiency and old-style simplicity. Although a punched-card system and electrically operated book-keeping machines are used, the customer's own order is used as the basis of the whole operation. Where goods have to come from more than one department the order is cut up and the bits distributed round with a set of forms which incorporate all the relevant information for dispatch, plus the necessary labels.

The sorting area, with glacis on left and outgoing conveyors on right



Part of the packing floor, showing sorting cages and (in background) the glacis; right, loading deck—the overhead conveyor is bringing outgoing parcels from upper floors

is in fact a large sloping table, the purpose of which is to provide a continuous flow of parcels to sorters stationed along its foot. The sloping surface provides buffer storage space to smooth out any difference in frequency of arrival of parcels from the upper floors and their disposal by the sorters.

Packing Stations

All parcels carry a coloured label indicating the method of transport so that sorting is extremely rapid. The glacis being elevated, the belts from it to the packing stations go over the paths used by the staff moving inwards goods. The whole system is reminiscent of the overhead cash railway once beloved of all large departmental stores. The packing stations are in fact portions of the floor marked off by light movable cages. Each packer knows what to expect for a particular customer as he receives details of customers' orders simultaneously with the department responsible for selling them.

The collecting conveyors (from chutes to glacis)

The architects for the new building were Messrs. Watson, Johnson and Stokes, of Birmingham. The mechanical equipment described was designed and supplied by Sovex, Limited, of Erith.

Construction work has started on what will be Britain's longest crude oil pipeline when it is completed by the end of next year. The pipeline will run for nearly 60 miles across South Wales, linking B.P.'s new deep-water tanker terminal now being built at Milford Haven to the B.P. Llandarcy refinery, and will have an annual capacity of five million tons. Site work has begun at the refinery end and initially is being concentrated on the more difficult sections where the pipeline will cross roads, rivers and railways. Next spring, work will start on the main run of the line which will be laid at the rate of two miles a week.

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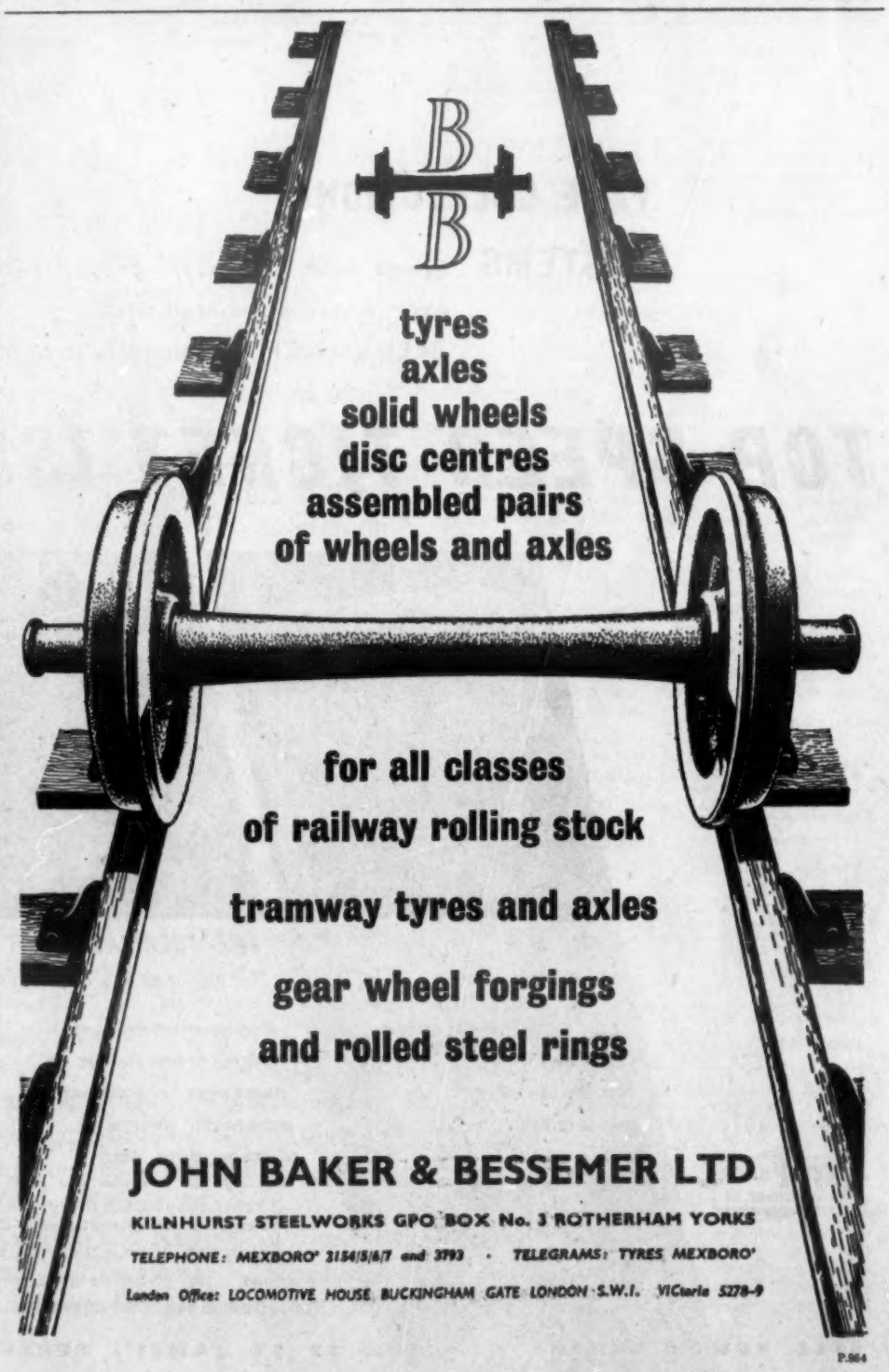

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NEWS FROM ALL QUARTERS

Record Advertising Receipts of B.T.C.

B.T.C. commercial advertising in the three months ended September 30 brought in all-time record receipts of £855,000. London Transport road and rail sites accounted for the largest single amount—£419,000.

G.N.R. Fares to be Adjusted

Rates and fares on the former G.N.R. system in Northern Ireland are to be brought into line with those charged by the U.T.A. from December 1. Not all fares will be increased, however. The G.N.R. system was absorbed by U.T.A. and C.I.E. within their respective territories on October 1.

Buyer Sought for Sheffield Trams

The fate of some 30 modern tramcars in its fleet is giving Sheffield Transport Department food for thought. The undertaking is unwilling to scrap these modern cars and is hoping to find an overseas buyer for them. Sheffield is at present planning to abandon its entire tramway system by 1961.

Twin Carriageways on A1

Two further lengths of twin carriageway on the Great North Road have been opened to traffic. The first is Buckden railway bridge to Ellington Brook in Huntingdon, including the improvement of the railway bridge itself. This scheme is 2¼ miles long and is costing some £175,000. The second length is between Astwick Turn and Newspring Cottages, Bedfordshire, a distance of 2¼ miles, costing some £100,000.

Liverpool Railway Road Vehicle Depot

Work has begun on the building of a new maintenance depot for London Midland Region road motor vehicles in Liverpool. It will carry out heavy repairs, painting and body overhauls which hitherto have had to be done in Blackburn, and will also enable one of the present six depots in Liverpool to be closed, another to be used as a garage and the other four depots will be relieved of heavy inspection which they are not fitted adequately to carry out. Some 530 vehicles and 1,300 trailers will be maintained at the new depot at Huskisson and it will also handle heavy body repairs and painting of 218 vehicles and 160 trailers operating in North Wales.

Fast Laying of Long Welded Track

A train of 11 bolster wagons with a total length of about 700 ft. has been successfully used by the North Eastern Region for laying 300-ft. long welded rails. Up to 36 rails can be loaded on to the wagons at the new rail welding depot at Dinsdale, near Darlington, and pairs are fishplated together to form 600-ft. lengths. The rear wagon of the train has special gantry equipment which has been designed for guiding the lengths of rail off the wagons at normal rail spacing of 4 ft. 8½ in. and for lowering the rail ends. The ends of the new rails are fishplated to the existing track and the train is then drawn forward, the old rails being tipped out of the chairs as soon as the last wagon has cleared them. Last week a section of the East Coast main line, between Beningborough and Tollerton, was relaid by this method, using 109-lb. F.B. rail on concrete sleepers.

Line Closing

On and from December 1 the section of line, Donington-on-Bain (inclusive) to Wragby (exclusive) on the Eastern Region in Lincolnshire will be closed to all traffic. The stations concerned are Donington-on-Bain, South Willingham and East Barkwith.

Dublin Rail Closure Opposed

Dublin County Council is asking Coras Iompair Eireann to defer closing the Bray—Harcourt Street railway line (MODERN TRANSPORT, November 8) until alternative transport is provided. The council considers that the action of C.I.E. in closing the line will cause serious hardship to the residents of Dublin county, who rely on it for service. Many of the users are schoolchildren.

Manchester Terminus Feat

Within the space of 52 hours, the London Midland Region last weekend relaid the tracks in the approaches to London Road Station, Manchester, and installed new signalling. This reconstruction was necessary for the first stage of the Manchester—Crewe electrification. London Road Station was closed for the first time in its history from midnight on Friday and some 300 trains were diverted to other stations.

Franco-Spanish Train Connections

Next summer, the French Railways *Sud Express* will leave 10 min. later from both Paris outwards (dep. 13.45) and Hendaye inwards (dep. 09.45). The timings of the Spanish Talgo train connecting with the *Iberia Express* will be to give an earlier arrival in Madrid (17.30 instead of 18.15) and a later departure therefrom (13.00 instead of 12.45). The connections for Lisbon with the *Iberia Express* by ordinary train will operate from July 15 to October 3, 1959, with an arrival in Lisbon at 06.00 and a departure therefrom at 23.00.

Colchester—Clacton Electrification

As part of what is described as "the biggest general improvement in train services in the history of the Great Eastern," numerous diesel feeder services will next year run to connect with main-line expresses. The Liverpool Street—Clacton—Walton service in off-peak hours will be better than ever. The full benefit to Clacton and Walton branch passengers will be felt in March, 1959, when the local service will be electrified, giving additional connections with London trains at Colchester.

Speed Limit on London Exits

The speed limit on two further lengths of the Great West Road extension, two lengths of the London—Great Yarmouth trunk road (A12) at Brentwood and three lengths of road in Harlow New Town has been raised from 30 m.p.h. to 40 m.p.h. But the 40-m.p.h. speed limit will be imposed on three previously unrestricted lengths of the A12 road between Romford and Shenfield. Almost the whole of the completed part of the Great West Road extension from Chiswick to Hammersmith will now be subject to the higher speed limit.

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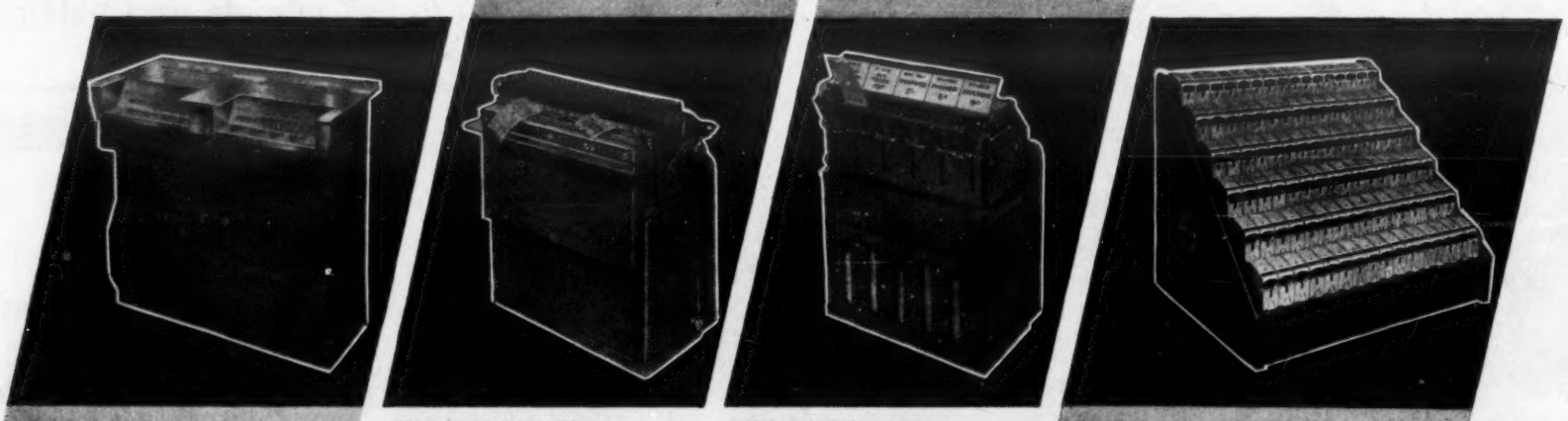

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COMMERCIAL AVIATION

Transatlantic Traffic

FRENCH HELICOPTER LOADS

MORE than 465,000 passengers flew the North Atlantic during the past summer, by far the largest number of them—68.5 per cent—in the economy class cabins of the scheduled airlines, it has been reported by the International Air Transport Association. Economy class services carried a total of 319,817 travellers; 77,623 travelled first class, and 69,453 went tourist for an overall total of 466,893 airline passengers during the July-August-September period. According to reports compiled on behalf of the carriers by Mr. E. S. Pefanis, secretary of I.A.T.A. Traffic Conference 1, total passenger traffic for the quarter was 35.2 per cent above the same three months of 1957 and 28.1 per cent above the second quarter of this year. During the third quarter I.A.T.A. airlines operated a total of 10,253 flights over the route, which was 25.4 per cent up on the previous summer. Seats available, however, rose by 39.4 per cent, due to the introduction of new and larger aircraft and the greater seating capacities of the new economy class.

Westbound travellers outnumbered those flying east during the summer: 277,944 to 188,949; and westbound load factors averaged well over 64 per cent throughout the period, reaching a peak of 88.9 in August. Eastbound aircraft operated at 55.8 per cent of capacity. The both-ways average utilisation of capacity for the quarter was 67.8 per cent, a drop of 2.1 per cent on the same quarter of 1957, but an increase of more than 7 per cent on the second quarter of this year.

West Indies Says No To Eagle

The West Indies Government has decided not to approve an application by Eagle Airways (Bermuda), Limited, to run a service between Bermuda, Antigua, Barbados and Trinidad. In a four-point decision, the Government pointed out that British West Indian Airways has an agreement with the Government, which involves running an uneconomic service in the Federation, and another airline operating on the route would adversely affect the company's ability to carry out the service. The Federal Government aimed "as soon as possible" to have a national airline and reasonable protection of West Indies internal routes was needed now. A further loss to B.W.I.A. would mean a further subsidy.

B.O.A.C. Daily Transatlantic Comet Service

The British Overseas Airways Corporation's de Havilland Comet 4s, which were recently introduced on the North Atlantic, began a daily service in each direction between London and New York on November 14. They have superseded the Stratocruisers which have operated the Monarch flights for 7½ years and were first operated by B.O.A.C. on North Atlantic routes on December 6, 1949. The Comets are scheduled to leave London Airport North at 10.15 and to arrive at New York at 20.45 G.M.T. (15.45 hours local time). The same aircraft normally operates the return journey the same day, leaving New York at 21.00 local time (02.00 hours G.M.T. the following day) and arriving at London at 08.45. The first daily Comet service from New York to London actually left a day early since fog had delayed the Stratocruiser in London.

B.E.A. and Automatic Landing

The chairman of British European Airways, Lord Douglas of Kirtleside, in the current edition of the *B.E.A. Magazine*, forecasts that the next generation of B.E.A. aeroplanes will be equipped to land automatically. This equipment is, in fact, to be built into the DH121, deliveries of which will commence in 1964. Commenting on the "patient development work" of the Blind Landing Experimental Unit of the Royal Aircraft Establishment at Bedford, Lord Douglas says: "Automatics have become such an essential part of modern aeroplanes that it should not be too difficult to fit into existing systems what would amount to some additional equipment for automatic landing, so that the extra weight and complexity will be reasonable." In future, all airlines must reduce the effect of weather on their operations. This objective was particularly important to B.E.A. because, as an exclusively short-haul airline, it had to make more take-offs and landings than its competitors—a large number of them in bad weather. For these reasons, he believed B.E.A. must make every effort to get automatic landing equipment installed in its next generation of aeroplanes, even if use of the equipment was not possible at first right down to "zero-zero" conditions.

Normandy Helicopter Service Results

As recorded in MODERN TRANSPORT at the time it was announced last June that the two subsidiaries in Normandy of Société Générale de Transports Départementaux, of Paris, were to operate during the summer a joint Caen—Le Havre service with a 15-seat Vertol 44 helicopter. The two companies are Les Courriers Normands and Compagnie Normande D'Autobus. There were three flights each way on the 67.5 km. route between Caen and Le Havre with stops at Ouistreham, Cabourg, Deauville and Honfleur. The service operated from July 25 to August 31, and during this period there were 110 return flights between Caen and Le Havre by scheduled service, five return flights from Le Havre to Deauville on a supplementary service, and four *ad hoc* return flights. The number of kilometres covered was 15,450, of which 330 km. were on *ad hoc* services. The timetable was strictly observed and flights were almost 100 per cent on time. The average speed (including landing and taking off) was 100 km.p.h. The numbers of passengers carried were 3,332 on scheduled and supplementary services, and 60 on *ad hoc* services. Passenger-kilometres totalled 115,893, of which 4,700 were on special services. The average distance per passenger carried on the scheduled and supplementary service was 33.4 km. and the traffic handled at each heliport was divided as follows:

Heliports	*Passengers Embarked*	*Disembarked*	*Total*
Le Havre	1,177	1,095	2,272
Deauville	913	1,016	1,929
Caen	517	398	915
Cabourg	352	376	728
Honfleur	208	267	475
Ouistreham	165	180	345
	3,332	3,332	6,664

The average passenger load factor on the scheduled and supplementary services was 7.35 or 52.5 per cent and it is noteworthy that in the first week it was 40.7 per cent, whereas in the last fortnight it was 61.4 per cent.

RETIREMENT OF SOUTHERN CHIEF CIVIL ENGINEER

Mr. F. E. CAMPION, M.I.C.E.

• • • • • •

As already recorded in MODERN TRANSPORT, Mr. Frederic Eugene Campion, M.I.C.E., who has for more than seven years been chief civil engineer of the Southern Region of British Railways, relinquishes that appointment on November 30 upon retirement. Educated at Seafield School, Bexhill, and Uppingham, he commenced his career in 1912 with the Great Northern Railway (Ireland) as a pupil under the chief engineer, who was his father, the late Mr. F. A. Campion. He later served in England under Mr. C. J. Brown, the then chief engineer of the Great Northern Railway. In 1914-1915 he held a commission in the Royal Engineers (Special Reserve) and in 1916 was appointed an assistant on the Great Northern Railway of Ireland. Four years later he joined the London, Brighton and South Coast Railway as resident engineer on the Oxted Tunnel repair work and in 1921 was transferred to East Croydon as assistant district engineer. Following the railway amalgamations on January 1, 1923, Mr. Campion became assistant divisional engineer, London East, Southern Railway, and transferred to head office four years later. From 1930 to 1933 he was assistant for special works and from 1933 to 1935, when he became divisional engineer, London East, he was assistant to the chief engineer. He was transferred to London West in 1940, again as divisional engineer, and in 1946 was appointed maintenance engineer of the Southern Railway. When the railways were taken over by the British Transport Commission in January, 1948, he was appointed assistant civil engineer, Southern Region, from which post he was promoted in March, 1951, to succeed Mr. V. A. M. Robertson as civil engineer—the designation of the appointment at that time. Mr. Campion was a pioneer of the application of labour control and incentive schemes to permanent way maintenance and also to staff engaged outdoors on the maintenance of bridges and buildings and similar work. In the last few years he has been responsible for a number of major works in connection with railway modernisation, including widenings between Bickley Junction and Swanley and between Rainham and Newington, together with a considerable number of carriage and repair sheds, substations and structures required in connection with the Southern Region's Kent Coast electrification schemes.

IN PARLIAMENT

Pace of New Road Building

TREATMENT OF B.R. DEFICIT

HOW closely did the new roads and road improvement programmes correspond to the growth in the vehicle population in Great Britain, MR. G. NABARRO asked the Minister of Transport. MR. H. WATKINSON said that new construction and improvements in the present road programme were designed to cater for traffic increases for many years to come. The rate of growth of vehicles in Great Britain was estimated at about 8 per cent per annum. Mr. Nabarro suggested that with the ending of the credit squeeze and the freeing of all hire-purchase restrictions, this rate of growth was likely to be considerably stimulated.

Mr. Watkinson observed slyly that one "could have great fun with statistics"; for example, he could say quite accurately that authorisations for new roads increased by no less than 80 per cent in 1957-58 over 1956-57, which might seem to give a fair margin over the 8 per cent. MR. ERNEST DAVIES intervened to say that there were considerable arrears to make up, owing to the fact that the increase in the car population had been far greater than was anticipated, as shown by figures published by the Road Research Laboratory. Was the Minister really satisfied that the present rate of road construction was equal to the growth and was overtaking those arrears? Mr. Watkinson replied that his department tried to reassess the growth in car population and was reassessing this again at the moment.

Goods Vehicle Survey—Report Next Year

Asked by MR. G. NABARRO when the results of the sample census of road goods vehicle operations undertaken in April this year might be made known, the Joint Parliamentary Secretary to the Ministry of Transport and Civil Aviation, MR. G. R. H. NUGENT, said they hoped to issue the results of this investigation as an official publication in the early part of next year.

Rural Transport Suggestion

MR. J. W. PEYTON asked the Minister of Transport if he would appoint an interdepartmental committee to carry out a comprehensive examination of passenger transport in rural areas. MR. H. WATKINSON said he had the problem under constant review and his own and other interested departments were now studying the question of rural bus services in the light of the evidence available. [Mr. Peyton has recently displaced Mr. G. Wilson as chairman of the Conservative members transport committee. His election is ascribed to the desire by backbenchers for a more active Conservative campaign for the improvement of rural transport facilities.—Editor.]

Treatment of B.R. 1958 Deficit

The Minister of Transport parried questions from Socialists as to when he would announce concrete proposals for financing the higher deficit of British Railways for 1958, or how much of the loss could be ascribed to the industrial recession. He observed that the future position of the B.T.C. would be considered when the general limits of its borrowing are considered, and this was bound to arise shortly in any case. Encouraged by a question by LIEUT.-COLONEL W. BROMLEY-DAVENPORT, the Minister observed that "looking back, it was a pity that so much time was spent on nationalisation and not enough on modernisation."

MR. ERNEST DAVIES: Will the Minister cast his mind back to prewar days and consider what modernisation was done on certain of the railways, notably the L.N.E.R., before the war? In his letter to the Minister did not the chairman of the Commission state that the Commission's present position was due to the decline in traffic resulting from the decline in coal and steel production, mainly steel production? Is not the Government's economic policy therefore to blame for the increase in the deficit?

★

NEW CoBo DIESEL LOCOMOTIVE

(*Continued from page* 3)

beneath the underframe, which can be emptied from time to time.

Both three-axle and two-axle bogies incorporate one-piece cast steel frames of the English Steel Castings Corporation type. Orthodox body swing bolster suspension is adopted, the flat body centre pivot fitting into a Ferobestos lined cup on the bolster, the latter being hung from the frame by swing links, of which there are eight on the three-axle and four on the two-axle bogies. Tractive

LIST OF CONTRACTORS

Main contractor and manufacturer of electrical equipment	Metropolitan-Vickers Electrical Co., Limited
Principal sub-contractors:	
Mechanical parts	Metropolitan-Vickers — Beyer Peacock, Limited
Diesel engine	Crossley Brothers, Limited
Brake equipment	Davies and Metcalfe, Limited
Bogie castings and springs	English Steel Corporation, Limited
Other sub-contractors include:	
Axleboxes	Hoffmann Manufacturing Co., Limited
Batteries	D.P. Battery Co., Limited
Cables	Siemens Edison Swan, Limited
Compressor and water pumps	Worthington-Simpson, Limited
Conduit	Simplex Electric Co., Limited
Engine cooling equipment	Serck Radiators, Limited
Exhausters	Westinghouse Brake and Signal Co., Limited
Fire extinguishing equipment	The Pyrene Co., Limited
Fans	Keith Blackman, Limited; Davidson and Co., Limited
Filters	Air-Maze, Limited; Vokes, Limited
Oil and fuel pumps	Varley-FMC, Ltd.
Resilient mountings	Metalastik, Limited; Silentbloc, Limited
Seats	A. W. Chapman, Limited
Shock absorbers	Woodhead-Monroe, Limited
Speed and mileage indicating equipment	British Thompson-Houston Co., Limited.
Train heating boiler	Spanner Boilers, Limited
Wheels and axles	John Baker and Bessemer, Limited
Windows	Beckett, Laycock and Watkinson, Limited

effort and braking forces are exerted through renewable liners placed between the bogie transoms and the bolster. Springing is by the semi-equalising method, whereby beams span the distance between the axles, and the bogie frame is supported on helical springs resting on these beams. A number of refinements in the suspension include the addition of Metalastik bonded rubber sandwiches interposed between the axlebox top and the equalising beams, the introduction of Ferobestos pads into the spring seats, and the use of Woodhead-Monroe shock absorbers in parallel with the helical springs and also between body and bogie frame, thus counteracting hunting.

(*To be continued*)

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Specially designed for on-and-off-the-road service where a large part of the work is off-the-road and particularly severe.

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MILAN UNDERGROUND PROJECT

Work Proceeding on Two Sections of Line 1

WITH 1961 in mind as the year for completion of the first of four lines, work is proceeding at four points on the projected underground railway network in Milan, the largest city of Northern Italy, with a population of about 1,350,000. A company, Metropolitana Milanese, was given a construction and operating franchise by the city council in 1955 and it is now announced that the work is going well on the first stage of the construction programme. At the end of October the company raised a second sum for its capital works of 8,000 million lire on the Milan Bourse in the record time of four hours. This will enable work to go on with the first line of the four-route system now envisaged by Metropolitana Milanese.

Layout

The four lines now projected will have a total length of about 22.9 miles and the layout is shown on the accompanying diagram. Work is going on at present on Line 1, the longest of the four routes,

Proposed layout of the Metropolitan Milanese showing the sections under construction

and this will be the first line to be brought into operation. It is the only one of the four lines for which anything but an approximate route has been fixed, and a full plan of 24 stations has been drawn up. Line 1 will run from Marelli in the extreme north of the town to Pagano in the west, where it will split into two short branches, one on which two stations have been placed as far as Fiera (Milan Fair site), beyond which it will proceed a short distance to the north-west for traffic purposes, and the other of four stations and terminating at Bande Nere. A depot and workshop will be located between the Marelli terminus and Villa station.

A route has been roughed out for the other three lines, but Metropolitana Milanese points out that these will be liable to alteration if such is found to be necessary. The only stations at present named on these lines are those which will be interchange stations with Line 1; these are Argentina and Cadorna for Line 2, Duomo for Line 3 and Oberdan for Line 4. The approximate route of the three lines is as follows: Line 2—starting east of the town at the State Railway station of Lambrate, this will run to the Central Station via Via Pacini, Piazza Piola, Via Gran Sasso, Via Palestrina and Via Doria, from thence to the Varesine railway station via Via Pirelli, and then to its provisional terminus at Porta Ticinese via Corso Garibaldi, Piazzale Cadorna and Conca del Naviglio; Line 3—starting north of the town at Viale Lunigiana, this line is planned to run past the Central Station to Piazza del Duomo via Via Vittor Pisani and Piazza Cavour and then continue down Via Torino to Via Andrea Solari; Line 4—this will start in the north-west of Milan in Piazzale Firenze, travelling to the Varesine Station by way of Corso Sempione and Via Procaccini and then running to its provisional terminus at Piazza Medaglie d'Oro via Piazza della Republica, Viale Majno and Viale Caldara. Some district names for these routes—not necessarily those which will later be chosen for stations—are shown on the plan. The length of the lines will be: Line 1, 14.5 km. (about 9 miles); Line 2, roundly 8.5 km. (about 5.3 miles); Line 3, roundly 5.5 km. (about 3.5 miles); and Line 4, roundly 8 km.; (about 5 miles).

Work in Progress

Work is at present going on on two sections of Line 1 which together total in track distance about 55 per cent of the line. These sections under construction are from the northern terminus of Marelli to Pasteur and from the route via one of the western branch termini—Fiera—eastwards to a point between Conciliazione and Cadorna, the interchange station for Line 2. Line 1 is expected to be finished completely by 1961.

As far as possible, all stations on the four lines will be standardised, particularly in the matter of track layout and signalling. The four interchange stations will be the exception to this. Average distance between stations on Line 1 will be 590 metres (645 yd.)—the greatest distance being 754 metres (825 yd.) between Conciliazione and Cadorna and the shortest 367 metres (403 yd.) between Cordusio and Duomo.

The tunnel is 7.5 metres (24 ft. 7 in.) wide at rail level. These dimensions are designed to permit the loading gauge of the cars to be of 2.85 metres (9 ft. 4 in.) in width. The tunnel roof will be in most cases about 3 metres (9 ft. 11 in.) below road level, and the permanent way about 8 metres (26 ft. 3 in.) below road level. Platforms will be 106 metres (348 ft.) long to accommodate six-car trains; the platforms for the two directions will face each other. Entrance will be by stairs from a booking hall, a set of ticket-counters and turnstiles being placed in front of the stairs.

Money

Total construction cost per kilometre is estimated at 2,000 million lire, of which about 1,000 million lire will be taken up by actual tunnel and station building. This means that Line 1 will cost some 26,000 million lire, excluding the western branch to Bande Nere. To finance this the capital of Metropolitana Milanese, at present 2,000 million lire, will be raised by stages to 6,000 million lire, and a 6 per cent debenture covered completely by a municipal guarantee is being issued. A first lot of 6,000 million lire of this was issued last year and a second lot, of 8,000 million lire, was the one issued in October.

Public Works Exhibition

(Continued from page 6)

British tractor in Canada and remains in production. Also having a first major showing on the stand was the International BTD20 crawler tractor with 124-b.h.p. Rolls-Royce engine and six-speed transmission.

Probably the most advanced of the British commercial hydrostatic transmissions is the Dowty Equipment unit and as well as forming the central feature of the Dowty stand, which also carried a wide variety of hydraulic equipment for tractors, plant and machinery, its practical application was demonstrated in a new road roller by Marshall, Sons and Company. The Dowty transmission employs a variable-delivery tilting-head piston pump driven by the engine and a fixed-displacement motor driving the rolls through reduction gears. Variation of the pump swash angle controls speed and direction of the motor, control being by a single lever the position of which on either side of a neutral position determines direction and "gear" reduction. In the neutral position the motor is locked solid and positive dynamic braking is operative at all positions of the lever; thus normal service friction brakes are not required, though a separate parking-emergency brake is fitted.

Hydrostatic transmission also featured in a new driverless Mono-Rail transporter by Road Machines (Drayton) and Mark II Bantam three-wheeled works truck for loads of up to four tons by Reliance Trucks, which is also built as a tractor.

Although there is no apparent move to apply pneumatics to motive transmission there is evidence of the growing popularity of pneumatic devices for control and positioning functions of many types of machine. A range of such apparatus was exhibited by Westinghouse Brake and Signal Company, which had made working demonstrations of an excavator control cabin and to show the advantages of the flexibility of compressed air for graduable control compared with straight on-off controls, as well as a display of the new Simplifix pneumatic couplings and pipe fittings.

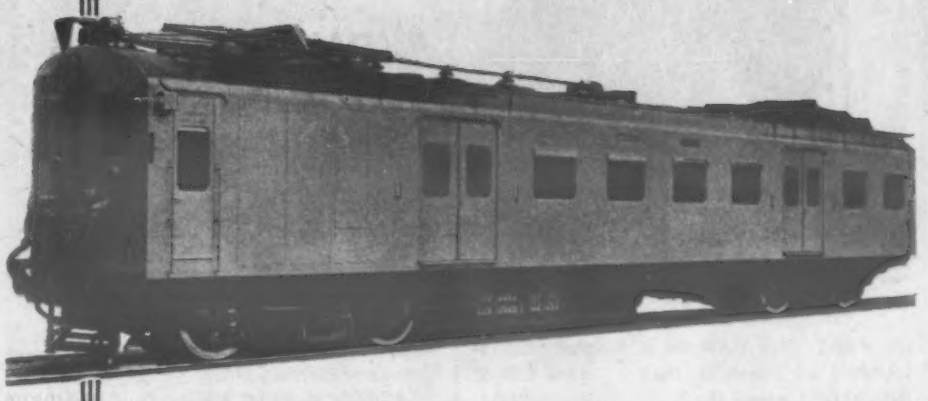
Apart from other features that have given the dragline excavators of Priestman Brothers an edge over most competitive equipment (notably the cross-roll bearing slewing ring developed in collaboration with British Timken), the Hull firm introduced at the show the first British-built excavator in the ¾-yd. capacity to embody torque-converter drive. It has taken a long time for the advantages for certain functions of torque-converter transmission to become generally acknowledged, though amply demonstrated by the wartime Brockhouse-equipped David Brown tractor in towing unprecedentedly heavy bomber aircraft. During the past two years however it has become practically standard equipment on tractor-mounted loading shovels.

B.T.C. TRAFFIC RECEIPTS: PERIOD NO. 11—1958

	Four weeks to November 2, 1958			Aggregate for 44 weeks		
	1958 (£ thousands)	1957	+ or —	1958 (£ thousands)	1957	+ or —
PASSENGERS						
British Railways	9,292	8,950	+ 342	119,394	120,654	— 1,260
London Transport Railways	1,879	1,795	+ 84	20,564	19,510	+ 1,054
London Transport Road services	4,308	4,498	— 190	40,287	50,329	— 10,042
Provincial and Scottish Buses	4,366	4,174	+ 192	51,475	49,248	+ 2,227
Ships	280	267	+ 13	6,429	6,396	+ 33
Total Passengers	20,125	19,684	+ 441	238,149	246,137	— 7,988
FREIGHT, PARCELS AND MAILS						
British Railways						
Merchandise and livestock	7,459	8,710	— 1,251	78,059	91,315	— 13,256
Minerals	3,474	4,401	— 927	37,910	45,011	— 8,901
Coal and coke	9,278	10,777	— 1,499	103,025	106,473	— 3,448
Parcels, etc., by passenger train	4,147	4,193	— 46	43,846	43,112	— 734
Collection and delivery, etc.	937	1,057	— 120	10,421	11,363	— 942
Total Freight British Railways	25,295	29,138	— 3,843	273,261	297,274	— 24,013
Others	4,409	4,476	— 67	46,246	46,895	— 649
Total Freight, Parcels and Mails	29,704	33,614	— 3,910	319,507	344,169	— 24,662
Aggregate	49,829	53,298	— 3,469	557,656	590,296	— 32,650

Comparisons are affected by increases in rates which have been authorised from time to time, by the provincial and Scottish bus strike from July 20 to 28, 1957, by the London Transport road services strike from May 5 to June 28, 1958, and by the restrictions in oil supplies which operated from November 7, 1956, to May 14, 1957

349 COACHES FOR SOUTH AFRICA



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who, as main contractors, are supplying 70 motor-coaches and 123 trailers, whilst 35 motor-coaches and 121 trailers are being supplied by The Birmingham Railway Carriage & Wagon Co. Ltd. The main electrical items were provided by Metropolitan-Vickers Electrical Co. Ltd

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South Africa—Westinghouse Brake & Signal Co. S.A. (Pty.) Ltd., Johannesburg
Agents:—Bellamy & Lambie, Johannesburg

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ASSISTANT required for general duties in the Central Transport Department in London Office of large Steel Company. Age about 25/35 years, preferably but not necessarily with some experience of transport and/or shipping including rates and charging procedure. The work will mainly involve the keeping and analysis of records and statistical returns on road and rail transport and shipping, including general correspondence where necessary. Box No. 3806 MODERN TRANSPORT, 3-16 Woburn Place, W.C.1.

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A NATIONAL organisation wish to put on record that their Chief Transport Officer has become redundant owing to a policy of decentralisation. He is highly recommended for employment in a similar capacity and they will be happy to answer any question on his behalf. Apply Box No. 3805 MODERN TRANSPORT, 3-16 Woburn Place, W.C.1.

Goggomobil Van on Test

(*Continued from page 5*)

large tank filler cap. Here again there has been improvement and in current vehicles the seat cushion is fixed and the whole seat slides clear of the filler cap, which also provides fore-and-aft adjustment.

The preselective gearchanging proved delightfully simple and smooth. The selector switch is conveniently positioned in the centre of the dash and after selection of a gear, its engagement is merely a matter of operating the clutch pedal, with slight adjustment up or down of engine speed to obtain perfect smoothness. Care was necessary to get the selector right home into the gear notch and also to use the full clutch-pedal travel and, to avoid overheating the solenoids, the driver is warned to engage neutral when stationary in traffic for any length of time, though of course first gear can be preselected ready for starting. Reverse gear is brought into use by first engaging neutral with the main selector and clutch and then using a separate pushbutton to preselect reverse, which is engaged by operation of the clutch pedal.

Neat engine compartment accessible through rear doors and lifting cover. The back panel below the doors is also detachable

Our first task was to weigh the empty vehicle and the running tare with full tank but no spare wheel was 10¼ cwt. A load of 5 cwt. and items of test equipment brought the weight to 15 cwt. 1 qr. 14 lb., to which our personal 1¼ cwt. was additional throughout the observed sections of the test. We had been surprised at the lively performance of the unladen vehicle and its accurate steering, comfortable suspension and stability under varying conditions were also noteworthy. We had anticipated some marked effects of loading on one or more aspects of performance but were agreeably surprised to find that there was little detectable—though admittedly laden stability was helped by the bulk of the load being carried near floor level.

The willing little engine would take the loaded vehicle from rest to 20 m.p.h. in about 6 sec. and to 30 m.p.h. in just over 13 sec. and although the acceleration rate tailed off towards the top of the range, there was still some go in it at 35 m.p.h. in third gear and 45 m.p.h. in top (approaching 6,000 r.p.m.). Several times when gradient was favourable we had the speedometer (graduated in kilometres on this vehicle) past the 80 mark with the engine humming like a contented mosquito and the true top speed on the level was probably about 47 m.p.h. This ability to turn over really fast, well-matched gear ratios and the very fast gear-change gave a very favourable performance on hills. Both the long pull past Croydon Aerodrome on Purley Way and Worms Heath climb were taken in third gear and crested at about 30 m.p.h. The maximum gradient on which a restart was possible was 1 in 5 (actually 21 per cent on the Don meter) with rather lengthy slipping of the clutch.

With a drum diameter of 7¼ in., providing a specific lining area of about 74 sq. in. per ton gross, the efficiency of the hydraulically operated brakes was limited only by the adhesion of the small wheels. All wheels could be locked with only moderate pedal pressure and in four simulated emergency stops from 30 m.p.h. on good tarmac surfaces, using sufficient pressure to keep just below the locking point, the average distance taken to stop was 39 ft. The best stop was 37 ft. As was expected with this large brake lining area, there was no trace of fade at the end of our usual coasting run down Titsey Hill.

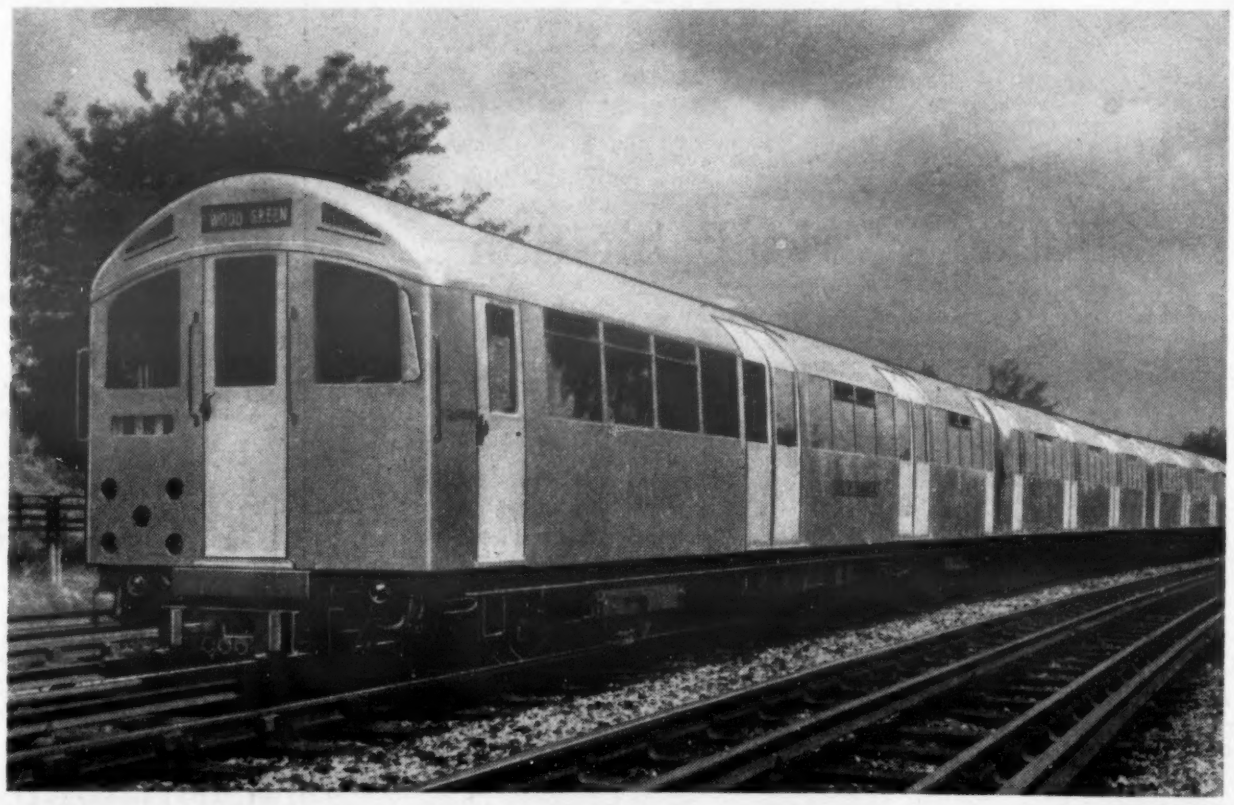
Fuel Consumption

Over short distances, fuel consumption is more conveniently measured in pints rather than gallons and in our standard 15-mile continuous-running test on A25 between Limpsfield Common and Riverhead, with fairly heavy traffic on the road, a consumption of 53.2 m.p.g. at an average speed of 29 m.p.h. was recorded. Overall fuel consumption for 85 miles run (70 miles with full load and about 30 miles in London and suburbs), during which the vehicle was worked really hard with many stops and much low-gear work in the various tests, worked out at a little under 48 m.p.g. It seems reasonable to suppose that normal consumption in local delivery work would lie somewhere between these two figures. It will be noted that the fuel used is a 25 to 1 mixture of premium-grade petrol and lubricating oil.

Our test has left no doubt in our minds that the Goggomobil is an entirely practical vehicle fully capable of dealing efficiently with 5-cwt. loads of the kind that do not require more space than its rather small dimensions provide. This small size in itself could be a great advantage in areas of heavy congestion for the vehicle can be taken through gaps and parked in spaces far too small for conventional vans and it can be turned without reversing in a 25-ft. space. Its simple and efficient design is commendable and should make small demands on maintenance, and although our acquaintance with it was too short to form any very valuable opinion, while it was in our charge it was free of the vagaries of performance once associated with petroil-lubricated two-stroke engines.

In our issue of October 25, a short description appeared of the I.C.I. metal degreasing plant installed by the British Motor Corporation in the old Riley works, Coventry. The Ardrox cleaner referred to in this connection is, in fact, made by Brent Chemical Products, Limited, Thomas Road, Brentford, Middlesex.

532 TUBE CARS



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NEW LICENSING BODY?

Minister's Thoughts at B.I.A.T.A. Dinner

PROPOSING the toast of "The Guests" at the annual dinner of the British Independent Air Transport Association, the chairman, Mr. T. W. Morton, who is succeeded by Mr. Eric Rylands, bearing, for the first time, the title of president, referred as he had done in his foreword to the annual report (MODERN TRANSPORT, November 15) to the disappointing traffic of the past summer. The independent operators could not but feel that prospects continued to be too uncertain. So far there had been trooping contracts for longer than 2½ years although there was the Britannia contract in prospect. If large modern aircraft were to be provided, the future must be more sure.

In view of some recent developments the independents were apprehensive about their inclusive tour and colonial coach traffic which they had built up despite many difficulties. It was true that there had recently been a tendency to authorise inclusive tour flights for three years—a most welcome improvement upon the single year which had been customary. Unfortunately this applied only at the British end and foreign governments still gave permission only from year to year. It was to be hoped that something could be done about this for B.I.A.T.A. felt strongly that the market was still too narrow and travel was too expensive. There were aircraft worth nearly £11 million on order for the independents and they sought reasonable scope to use them. It could not be over-emphasised that their views and ambitions did not clash with those of the corporations.

Search for New Passengers

Replying for the guests, Mr. Harold Watkinson, Minister of Transport and Civil Aviation, said that civil aviation throughout the world had already entered a new phase of its development and the overriding necessity for it in the years ahead was a vast expansion in the market for air travel to match the great expansion of carrying power. The airlines of the world had since the war developed, and, he thought, by now fully exploited, the market represented by the wealthy and the expenses account traveller. If the industry was to continue to expand it must find new markets among more modest travellers. International competition would be fiercer than before as the struggle to develop markets large enough to absorb the capacity of the world's civil air transport went on.

"It must obviously be the objective of the Government to do all within its power to facilitate the efforts of British airlines to obtain as large a part of the new markets ahead as possible so that all the components of our civil aviation effort, whether nationally-owned corporation or independent operator, may retain the traffic they have won in the past and expand it at least in step with the development of traffic in the future."

The Minister thought we might have to overhaul many of our present methods and ideas. For example, there was the plea which had been put forward by B.I.A.T.A. and others that independent airlines should run scheduled services in their own right and not merely as associates of the corporations. There was a lot to be said for this. Another example, potentially much more important, arose out of the suggestion made by Captain Morton in a letter to him some while ago that there was a case for providing for the licensing of operators of public air services so that standards of operation and reliability could be made subject to some positive check. This suggestion was, in fact, as they know, now being studied jointly by representatives of the association and the Ministry.

This idea might well prove very valuable in considering the problem of the "no man's land" between the scheduled and the non-scheduled operation. There were potential problems there that concerned the health of the reliable established operator whether he be a nationalised operator or an independent one. They must not allow the frivolous and second-rate operator to damage the wellbeing of the serious and efficient provider of services for the public. This could become a serious matter in the years immediately ahead.

Low Fares Right

There might be exceptions from time to time or from place to place, but overall the right policy for civil aviation and the only way in which it could expand traffic adequately to meet its rapidly expanding capacity was a low fares policy. Already they had seen the success of sueh policy in the economy class operations on the North Atlantic. They had indeed experienced such a success nearer home in the impressive build-up of cheap holiday travel to Europe which members of the association had developed in the last few years. However, this very success had, as usual, brought problems in its train, especially in European operations.

"On the one hand," said Mr. Watkinson, "I am quite sure that it is right that the regular scheduled operators should move increasingly towards lower fare structures, whether by way of special holiday travel or by way of lowering the standard fares. I very much hope indeed that we are not too far from the day when the economy class experiment on the Atlantic is accepted in Europe and elsewhere in the world.

"On the other hand, I for one am equally determined that this should not be at the expense of the British independents losing their rightful share in the development of a market which in so many ways they have made their own. This problem of fares is therefore a matter of government policy for the immediate as well as the longer term future, and it is something which we are already thinking about very hard."

Keeping a Fair Balance

They must ensure that the pirate operator did not undermine the established operator while at the same time ensuring that the industry did not petrify for lack of new blood of the right sort. They must ensure that the charter operator did not undermine the scheduled services, while at the same time ensuring that he had all the freedom and flexibility which his type of operation required for success. They must keep a fair balance between airlines that were financed by private enterprise and those that were nationally owned.

It might be that they could continue to deal with these problems as they had dealt with them or with similar ones in the past, but he had a strong personal feeling that affairs were becoming too complicated to be handled exclusively by the day-to-day procedures of his department in quite the same way as in the past. It might well be worth while considering whether the excellent work done by the Air Transport Advisory Council, combined with the idea lying behind Captain Morton's suggestion of an operator's licence, might not provide

(*Continued on page 14*)

Giant Earthmover

LETOURNEAU MACHINE WITH 70-TON CAPACITY

RECENTLY presented to public view in San Francisco by R. G. LeTourneau, Inc., of Longview, Texas, was a new giant earthmover, a self-propelled scraper, with a capacity of 70 U.S. tons, which is roughly equivalent to 50-60 cu. yd. The first LeTourneau scraper since the company sold its original earthmoving equipment business more than five years ago and also the largest and most powerful machine of its type in the world, it is claimed to have a capacity more than double that of average scrapers marketed by other manufacturers. The new machine was presented to the four-day American Mining Congress, which was told that the price would be in the region of $100,000 and that even larger scrapers with capacities of up to 100 cu. yd. were planned.

LeTourneau 50-60 cu. yd. scraper on the company's 12,000-acre proving ground. As we went to press the company announced introduction of its promised 130-ton capacity earthmover

The LeTourneau scraper is about 62 ft. long and 14 ft. wide and has an unladen weight of 130,000 lb. Powered by a Cummins 12-cylinder 600-b.h.p. diesel engine with electric transmission, it is said to have a top speed of 20 m.p.h. fully loaded. The diesel engine is coupled to a LeTourneau d.c. main generator which powers the traction motors and an alternator to power various auxiliary services such as steering and loading and unloading mechanisms.

Electric Wheel Transmission

Transmission is by means of the unique but now well-established LeTourneau Electric Wheel system, in which a d.c. traction motor is fitted to the hub of each of the four wheels and geared to the inside of the wheel rim. Control, including of the steering and brakes, is entirely by electric switches and incorporates a power-proportioning system that automatically transfers power from any wheel that begins to slip to the others. Service braking is regenerative, thus eliminating wearing brake parts, and low-pressure tubeless tyres have an overall diameter of 7 ft. 4 in. Various huge cross-country transporters, bulldozers and forestry and timber-handling machines of similar basic design to the new scraper have been in service for some years. An unspecified number of LeTourneau missile carrier-launchers incorporating the electric transmission have been ordered by the British Ministry of Supply for handling the American Corporal weapon.

The scraper will obviously commend itself for application wherever large quantities of earth have to be moved and its size and weight can be conveniently accommodated but it was presented to the American Mining Congress as a tool capable of converting marginal opencast mining operations into profitable undertakings. The only economic means hitherto of removing the bulk of the overburden from opencast sites was the giant power shovel, which is largely static and costs around three to four million dollars. The LeTourneau machine is relatively cheap at about $100,000 and has the advantage of complete mobility between site locations.

A WISE ENGINEER tells his Captain...

"BARIMAR saves time and money"

Auxiliary engine mishaps on a liner are a worry to captain and chief engineer alike. These sizeable engines generate electricity for light and power, and when one breaks down a "stand-by" must be pressed into service at once, otherwise the smooth running of the ship and the amenities the passengers expect are likely to suffer. When a breakdown happens, the ship's wireless "gets busy," and by time the ship reaches port, arrangements have been made for the repair of the damage. Breakdowns due to cracks or fractures in castings of this kind, are obviously "rush jobs" for resourceful Barimar.

Badly damaged Auxiliary Diesel engine casting. There were also serious and extensive cracks, these cannot be seen in the picture.

The illustration shews the main casting of a ship's auxiliary Diesel engine. Notice the size of it—observe the pieces of the casting that are broken away. There was other damage too—serious and extensive cracks in the "well" of the casting that cannot be seen in the picture.

Auxiliary Diesel engine casting, perfectly repaired, and guaranteed by Barimar, ready for service again

All-round-the-clock relays of Barimar welders tackled this hefty job and, within a few days, the damaged casting was repaired as good as new and ready for service again, having been reinforced, accurately machined, and thoroughly tested. There is no damage to Diesel engines beyond the skill and resourcefulness of Barimar.

A new casting would have cost infinitely more than the repair by Barimar scientific welding, and could not have been so promptly reinstalled in the ship. Along with the reconditioned main casting went the well-known tag—the Barimar Money-back Guarantee—familiar to shipowners and ships' engineers all over the world. For Scientific Welding in *all* its aspects and in *every* kind of metal, Barimar has been supreme for over half a century.

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CRANKCASES: Fractures caused by broken connecting rods and run big ends, broken-off bearer arms, smashed sumps, cracked stud housings, broken bearing and flywheel housings, stripped drain-plug threads. IRON, ALUMINIUM OR ELEKTRON.
CRANKSHAFTS: Broken across web or journal, cracked, scored, threads stripped, splines or tapers worn.
TRANSMISSION: Cracked or broken gearbox and axle casings, damaged gear teeth, worn splines and tapers, fractured shafts, cracked differential casings.

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LETTERS TO THE EDITOR

A Chance at Moorgate

The Editor is always glad to receive letters from readers on subjects germane to the transport industry, but these should be written as concisely as possible. The opinions expressed therein must not, however, be regarded as having editorial endorsement. Where correspondents desire to use a nom-de-plume it is essential that the Editor should be informed of the name and full address of the writer as indication of good faith.

SIR,—Moorgate high level station is a medley of narrow, short, crooked platforms, badly constricted at the western end, and surrounded on three sides by ground from which the remains of bombed buildings have been entirely removed. Surely this is a golden opportunity for the British Transport Commission or the London Transport Executive to acquire, on terms unlikely ever to recur, the right to sufficient subsoil space to enable them at a later date to construct one island and at least two peninsular platforms, of generous width, straight faces, and long enough to accommodate a train of 12 full-length cars.

It would then be possible to have sloping approaches to the platforms from an entrance off Redcross Street, where the bridge at present is in the last stages of decay. In view of the proximity of Farringdon Station to the west, Aldersgate, already closed on many days in the year, would become redundant. The result would be a first-class station, a boon to many in the Wood Street area, faster trains and lower running costs, with no real inconvenience to anyone.—Yours faithfully,

F. A. RULER.

48 *The Knoll, Hayes,*
Bromley, Kent.

Sixty Years a Greyhound

SIR,—How pleasant to read on the front page of your issue of November 8 of the recent peregrinations of London and South Western engine No. 120! As you suggest, sexagenarian express engines are not met every day of the week. The accompanying old South Western photograph of this one shows it got up for working one of

No. 120 in all its glory

four special trains run from Southampton to London after the South African War. No. 120 brought home General Buller, No. 773 brought home Joseph Chamberlain and Kitchener, and No. 720, the big double single, was entrusted with the advance guard of the City Imperial Volunteers.—Yours faithfully,

C. HAMILTON ELLIS.

Mannings Heath,
Nr. Horsham, Sussex.

South Lancashire Transport

SIR,—There is one statement in the well-written article on South Lancashire Transport (MODERN TRANSPORT, November 1), that I would like to query. The author says that when Bolton took over the Walkden service (which was in 1926), S.L.T. worked Swinton—Farnworth via Little Hulton as a through service. I was employed in that area at the time and my recollection is different; in fact there is timetable evidence that Walkden—Clifton via Little Hulton and Farnworth was worked by through cars, although indicators were changed at "The Black Horse." The Bolton takeover of the Walkden route occurred about the same time as the starting of a through joint service (S.L.T. and Salford) between Walkden and Manchester (Deansgate).

I think it should be made clear that at some date prior to 1926—my guess is October 1, 1919—South Lancs cars ceased to work between Ashton-in-Makerfield and Haydock (except on race days), this section being taken over by St. Helens. In 1927-28 St. Helens and Wigan ran a through joint service between the two towns via Ashton but it was a failure because of bad timekeeping. To cater for the miners at Bryn, Wigan used to mass several of its long single-deckers on the loop there and if the pitmen were late coming up the whole service in both directions might be held up for up to half an hour, with the result that St. Helens found itself several cars short at the time the local mills turned out.

A regular Saturday night service with eight-wheel open-toppers was worked in 1926-27 between Ashton and Leigh and was well patronised despite the circuitous route as the direct bus service with small single-deckers was inadequate.—Yours faithfully,

CHAS. S. DUNBAR.

15 *Sherbourne Road,*
Acocks Green, Birmingham, 27.

★

NEW LICENSING BODY?

(*Continued from page 13*)

a clue to the right machinery for the future for harmonising conflicting or competing interests.

There were attractions in the idea of a new A.T.A.C. with new powers, revised and wider terms of reference and wider discretion, to which might be entrusted the day-to-day and month-by-month handling of many such conflicting requirements. He did not wish to suggest for one moment that we should contemplate anything as elaborate and, so far as he understood, long-winded as the C.A.B. procedure in the United States. The Government must still be responsible for final policy.

"But I wonder whether it is not possible to devise some kind of statutory authority which, without undue delay or excessive complexity, could fairly, as well as efficiently, hold the balance between the different interests of the industry and under the sanction of licensing powers assist the industry as a whole to maintain that discipline and orderly development which the members of your association have so admirably managed to maintain."

SOCIAL AND PERSONAL

B.T.C. Staff College

TO provide advanced training for younger officers in all its services the British Transport Commission is to set up a British Transport Staff College for higher management. The existing staff training centre at Woking is being converted for the purpose and it is expected that this will be ready for the first course to begin in the middle of 1959. Responsibility for policy concerning the administration of the staff college has been vested in a governing body, of which Sir Brian H. Robertson, chairman of the Commission, is chairman. The other members are:

Sir G. Wilfrid Anson, formerly deputy chairman of the Imperial Tobacco Co. (of Great Britain and Ireland), Limited.

Mr. Anthony Bull, member of the London Transport Executive.

Mr. C. P. Hopkins, general manager, Southern Region, British Railways.

Major-General Ll. Wansbrough-Jones, secretary general of the Commission.

Mr. A. B. B. Valentine, member of the Commission.

Sir Henry Willink, member of the Eastern Area Board; Master of Magdalene College, Cambridge.

Major-General W. D. A. Williams, C.B., C.B.E., at present Commissioner for Transport in the East Africa High Commission, has been appointed by the British Transport Commission as principal of the Staff College for Higher Management and will be taking up his duties in the spring of 1959.

* * *

We record with regret the death, at the age of 76, of Mr. T. C. Skinner, M.I.Mech.E., formerly a member of the Lilley and Skinner footwear business, but who subsequently designed the Skinner Union (S.U.) carburetter. A company was formed in 1912. It was sold in 1926 to the Morris Motors interests; Mr. Skinner retired in 1948.

* * *

Mr. C. J. E. Large has been appointed chief engineer, railcars, of the Metropolitan-Cammell Carriage and Wagon Co., Limited, at Saltley, with effect as from October 1. Mr. Large obtained his early training in the rolling stock industry with G. R. Turner, Limited, Langley Mill, Nottinghamshire, afterwards joining Cammell Laird and Co., Limited, as a draughtsman at its rolling stock factory at Nottingham: he was transferred in 1931 to Metropolitan - Cammell at Saltley and since that date has devoted practically the whole of his attention to the design and development of railcars.

Mr. C. J. E. Large

* * *

It is reported that Ing. F. Q. den Hollander is to relinquish the position of president of the Netherlands Railways at the end of this year.

* * *

We regret to record the death of Mr. F. R. Stagg, M.I.Struct.E., deputy chairman of Thos. W. Ward, Limited, Sheffield. He was 77.

* * *

The late Colonel Sir Joseph Nall, formerly chairman of Lancashire United Transport, Limited, left £7,396 (gross, £17,348).

* * *

Mr. P. M. Haydon, development assistant to motive power officer, Waterloo, has been appointed district motive power superintendent, Brighton, Southern Region, B.R.

* * *

We regret to record the death of Mr. E. J. Waddington, A.C.A., a director of Vickers, Limited, and of Vickers-Armstrongs, Limited. He was 64 years of age.

* * *

The death has occurred of Mr. John H. Hall, a director of Hall Brothers (South Shields), Limited. He was 51 years old. Mr. Hall and his brother, Mr. Edward Hall, started this coach business in March, 1930, with one vehicle.

* * *

We record with regret the death, at the age of 77, of Sir Thomas Harrison Hughes, former chairman of the Harrison Line and from 1939 to 1942 a director of the liner division of the Ministry of War Transport.

* * *

Mr. Raymond W. Birch, M.I.Mech.E., M.Inst.T., has been invested as Junior Warden of the Worshipful Company of Carmen for the year 1958-59. He has been a Liveryman of the company since 1942.

* * *

Mr. F. Beaney, A.R.I.C.S., a surveyor of the headquarters of the estate and rating surveyor's department, Eastern Region, has been appointed district estate surveyor, Peterborough, in succession to Mr. T. E. Charles, A.R.I.C.S., retiring.

* * *

On Tuesday the Chief Constable of Liverpool, Mr. J. W. T. Smith, presented safe driving awards to 150 Liverpool Corporation bus drivers. Liverpool Corporation Passenger Transport Department first entered the scheme in 1934 and 11 employees have since qualified for the 24-year award for the year 1957.

* * *

We regret to record the death, at the age of 76, of Mr. M. G. J. McHaffie, M.Inst.C.E., M.Inst.T., who was docks engineer, Southampton B.T.C. docks, from 1936 until his retirement in 1948. Mr. McHaffie was continuously concerned with improvements to the Southern Railway docks at Southampton during his 40 years' service in the port; he was resident engineer for the New Docks.

* * *

New amenity buildings for the use of the 1,200 enginemen at Saltley, Birmingham, were officially opened by Mr. David Blee, general manager of the London Midland Region of British Railways on November 14.

Among those present at the ceremony were Mr. E. W. Arkle, director of traffic services, Mr. J. Taylor Thompson, chief civil engineer, Mr. W. R. Headley, London Midland Region architect, who designed the buildings, Mr. E. H. Baker, motive power officer and Mr. E. A. Talbot the district motive power superintendent, Saltley.

* * *

The de Havilland Aircraft Co., Limited, has elected Mr. C. T. Wilkins, chief designer at Hatfield, and Mr. John Cunningham, chief test pilot, to the board. Mr. Harry Povey, who for many years was in charge of production, retires from the board on November 30. Mr. R. E. Bishop, hitherto design director, is appointed deputy managing director. Mr. R. M. Clarkson is appointed research director and Mr. Wilkins becomes chief designer of the company.

Lieut.-Colonel F. Bustard

IT is announced that Lieut.-Colonel Frank Bustard, O.B.E., M.Inst.T., founder and formerly managing director of the Atlantic Steam Navigation Co., Limited, and of Frank Bustard and Sons, Limited, is retiring from the board. He retired from the managing directorship two years ago. Colonel Bustard has had a singularly varied career in shipping. He served as apprentice with the former White Star Line and rose to become passenger traffic manager. He was prime mover in the development of tourist-class travel to America when emigration traffic slowed almost to a halt between the wars. He could also rightly be described as the father of the cruise movement, which was introduced by him with the *Homeric* cruises and the well known £1-a-day cruises in the *Doric*. Leaving the White Star Line in 1934, Colonel Bustard founded his own shipping firm under the name of Frank Bustard and Sons, Limited; "£10 fares" to America was the object and arrangements for the purchase of the Red Star Line fleet were completed when the then Chancellor of the Exchequer, Mr. Neville Chamberlain, stepped in and his plans were thwarted. Undaunted, he formed the Atlantic Steam Navigation company in 1936 for the building of vessels for the North Atlantic and Mediterranean runs. Once more his plans were shelved, this time by the outbreak of war. However, the postwar development of this company is well known. Colonel Bustard will continue as consultant to the company.

* * *

The death is announced of Mr. Joseph Lloyd, a director of J. Lloyd and Son, Limited, the Nuneaton bus and coach operator. He was 76.

* * *

Mr. J. Leslie Barnes has been appointed chief engineer, carriages and wagons, and a special director of the Metropolitan-Cammell Carriage and Wagon Co., Limited, Saltley, with effect as from October 1 following the retirement of Mr. H. Green. Except for a brief period in the motor trade Mr. Barnes has been in the railway rolling stock industry throughout his career, having commenced in 1915 in the drawing office of the Midland Railway-Carriage and Wagon Co., Limited, now included in the Metropolitan - Cammell group. He had seen service also with the Newlay carriage works at Leeds and the rolling stock factory of Cammell Laird and Co., Limited, at Nottingham prior to his engagement by Metropolitan-Cammell in 1935, since when he has been assistant to chief engineer (designs) and chief draughtsman.

Mr. J. L. Barnes

* * *

Mr. K. A. Smith and Mr. B. T. George have been appointed jointly field sales managers of the Clayton Dewandre Co., Limited.

* * *

Mr. J. G. Bruce, A.C.I.I., has been promoted principal executive assistant in the claims office of London Transport.

* * *

Mr. G. R. Chrimes has been appointed train running assistant to motive power officer, Waterloo, Southern Region, B.R.

* * *

The council of the International Civil Aviation Organisation has elected Mr. W. G. Algar, of Ireland, Colonel A. E. Chagas, of Brazil, and H. Söderberg, of Sweden, as its vice-presidents for the coming year; it also re-elected Mr. A. X. Pirson, of Belgium, as chairman of its air transport committee.

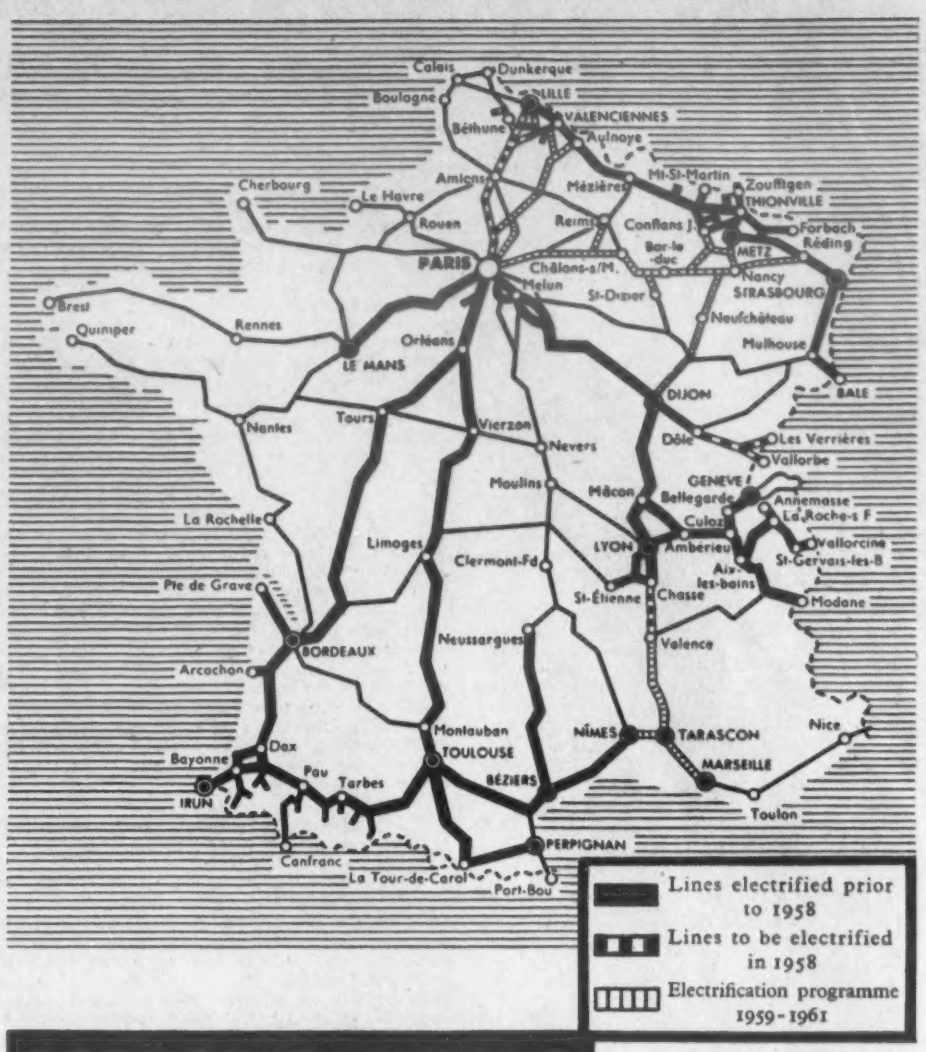
Mr. C. W. Wroth (right), who has retired as general manager of Potteries Motor Traction, receives from Driver A. Pointon, chairman of the local branch of the T. and G.W.U., a set of cut glass on behalf of the road staff. This was one of a series of presentations from staff in all sections of the undertaking

The British Transport Commission was this week to meet in Sheffield in the course of a three-day tour of the Leeds and Sheffield area. In addition to visiting a number of transport installations, the party was to meet many prominent personalities in local civic affairs, trade and industry, and the Press.

* * *

At least 400 steam locomotive drivers will have to be given training for diesel-electric or electric locomotive handling by June, 1959, and the Southern Region has opened a new central motive power training school at its locomotive depot at Stewarts Lane, Battersea. The opening ceremony was performed by Mr. C. P. Hopkins, general manager, Southern Region, on November 19. Stewarts Lane is being reshaped to become one of the key maintenance centres under electrification and diesel-electrification schemes.

ELECTRIC TRACTION IN FRANCE



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IMPORTANT CONTRACTS

Gloucester Coaches for E.A.R.

AN order for 18 new third-class coaches has been placed by East African Railways and Harbours with the Gloucester Railway Carriage and Wagon Co., Limited, of England, at a cost of some £11,000 each. It is hoped that the new coaches will be put into service in East Africa early in 1960. The Gloucester company's tender was the lowest of those made by 11 European competing firms. Each coach will accommodate up to 80 sitting passengers and will have full-length luggage racks. East African Railways and Harbours has also increased the order placed last August with the English Electric Co., Limited, for eight main-line diesel-electric locomotives to 10, at an additional cost of about £94,000.

Locomotive Transmission Testing

Heenan and Froude, Limited, has received an order from J. Stone and Co. (Deptford), Limited, for a Heenan Dynamatic (eddy-current) dynamometer to be used for testing the performance of Mekydro hydro-mechanical transmission gears for use principally on diesel locomotives from 400 to 1,800 h.p.

Durban Orders Leyland Buses

Durban Corporation has ordered 25 Royal Tiger Worldmaster single-deck buses valued at over £100,000 from the Leyland Motors subsidiary company in South Africa, Leyland Albion (Africa), Limited. The vehicles will incorporate the Pneumo-Cyclic (no clutch) gearbox and will have bodywork by Bus Bodies (South Africa), Limited, an associate company of Leyland at Port Elizabeth.

French-Built Paxman Engines

Davey, Paxman and Co., Limited, has announced an agreement with Societe des Forges et Chantiers de la Mediterranee, the French engineers and shipbuilders, under which the latter will build at its Le Havre works the Paxman YL type of diesel engine in powers between 500 b.h.p. and 2,000 b.h.p. Some two years ago a licence to make these engines in Italy was sold by Paxman to Breda.

Scottish Region Contracts

The following contracts have been placed by the Scottish Region of British Railways:

R. M. Caldwell and Co., Limited, Glasgow, for foundations and new approach roadway for 25-ton overhead electric crane, Bridgeton goods station.

The Automatic Telephone and Electric Co., Limited, Glasgow, for automatic branch telephone exchange, Perth district offices.

The Lanarkshire Welding Co., Limited, Wishaw, for re-decking bridge between Dalguise and Guay, Perth—Inverness line.

James Laidlaw and Sons, Ltd., Rutherglen, for reinforced concrete work at Hyndland new power-operated signalbox.

James Crawford and Sons, Limited, Glasgow, for reinforced concrete work at Dumbarton new power-operated signalbox.

G. Reid and Son, Ltd., Catrine, for erection of electric control centre, Cathcart.

Gardner-Engined Municipal Buses

Leeds City Transport Department, in September, 1930, purchased a Gardner 6-cylinder L2 type engine and fitted it in a Crossley Condor double-deck bus, thus becoming the first municipality to use a Gardner oil engine in a public service vehicle. Six months later there were still only 11 oil-engined buses in municipal services. Leeds has now ordered 30 Daimler double-deck chassis powered by the new Gardner 6LX type engine. Bolton Transport Department has also ordered a further eight Daimler double-deckers with Gardner engines making a total of 36 Daimlers with 6LW engines since the end of 1956.

Eastern Region Contracts

The Eastern Region of British Railways announces the following contracts:

British Insulated Callender's Cables, Limited, Belvedere, for supply and installation of signalling cables at Cambridge.

Standard Telephones and Cables, Limited, London, N.11, for supply and installation of equipment in new train control office at Doncaster.

Brush Electrical Engineering Co., Limited, Loughborough, for supply and installation of rotary frequency convertor sets and diesel generator standby sets for use with signalling systems at various depots on the Liverpool Street—Chelmsford—Southend electrification.

George Simpson (London), Limited, London, S.W.1, for track section cabins between Clapton and Stoke Newington.

W. and C. French, Limited, Wisbech, for repairs to bridge over River Smite between Bingham Road and Barnstone.

Thomas Fletcher and Co., Limited, Mansfield, for construction of foundation and track for 30-ton Goliath crane in Crimpsall Yard at Doncaster locomotive works.

Radio Aids in New Cargo Liner

The Leith depot of the Marconi International Marine Communication Co., Limited, has fitted a full range of communications equipment and radio aids to navigation in the new cargo liner *Cairnforth*, 8,200 tons. Built on the Forth by Burntisland Shipbuilding Co., Limited, for Cairn Line of Steamships, Limited, the new vessel employs an Oceanspan VI transmitter and an Atalanta receiver to handle radio-telegraph traffic on medium and high frequencies; and a Reliance transmitter, with an Autokey device and an Alert guard receiver, is installed for emergency use. A Seaguard auto alarm completes the emergency installation and a Salvita portable transmitter-receiver is carried for use in lifeboats. Long-range wireless bearings are provided by a Lodestone direction-finder and visual and recording echometers are combined in a Visagraph installation. The radar equipment is Marconi Marine Radiolocator IV with a 15-in. display unit.

★

TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

December 2—Ceylon.—Ministry of Agriculture and Food for 24 1½-ton capacity diesel-engined LORRIES. Tenders to the Chairman, Tender Board, Ministry of Agriculture and Food, Peradeniya. (ESB/28030/58.)

December 2—Formosa.—International Co-operation Administration for 24 MARINE DIESEL ENGINES, complete with all accessories. Photocopies of tender documents from Export Services Branch, B.o.T., price 5s. (ESB/27226/58/ICA.)

December 3—Vietnam.—International Co-operation Administration for 22 petrol-engined LORRIES. Tender documents from the Vietnamese Embassy, 12 Victoria Road, London, W.8, quoting invitation No. 474-13108.

December 3—Vietnam.—International Co-operation Administration for 26 heavy-duty diesel-engined TRACTORS (Invitation No. 475-13108) and two left-hand-drive STATION WAGONS and four LORRIES (Invitation No. 476-13108). Tender documents from the Vietnamese Embassy, 12 Victoria Road, London, W.8, quoting appropriate invitation number.

December 5—Union of South Africa.—South African Railways for up to 30 medium-weight wheeled INDUSTRIAL TRACTORS. Photocopies of tender documents from Export Services Branch, B.o.T., price 13s. (ESB/27509/58.)

December 10—Sudan.—Sudan Railways for 25 petrol TANK WAGONS and 11 fuel-oil TANK WAGONS. Specifications and drawings from the Office of Controller of Stores, Atbara. (Contract No. 1838.)

Agency Inquiry—Canada.—Mr. A. S. Henderson, president and general manager of Henderson Power Equipment, Limited, 560 Pembina Highway, Winnipeg, Manitoba, is seeking a United Kingdom source of supply of DIESEL ENGINES from 3 to 60 h.p. for industrial and marine duty. (ESB/27176/58.)

SHIPPING and SHIPBUILDING

Flags of Necessity Committee

MOST of the major American companies owning ships under the flags of Liberia, Panama, Honduras and Costa Rica have combined to establish an organisation known as the American Committee for Flags of Necessity. The total tonnage represented by the committee is estimated at between five and seven million deadweight. Mr. Erling D. Naess, president of the Naess Shipping Co., Incorporated, has been made chairman of the organisation. The primary purpose of the new organisation will be to protect American interests in ships under "flags of necessity." It will "counter false and misleading propaganda, uphold the high standards of American-owned flags of necessity ships, maintain contact with United States government departments, and deal with any problem of common interest to American owners of ships flying flags of necessity, viz. those of Liberia, Panama, Honduras and Costa Rica."

The first act of the committee was to make a direct approach to Mr. Omer Becu, general secretary of the International Transport Workers' Federation, which has fixed the period December 1-4 for a worldwide boycott of ships whose owners have not concluded "collective agreements" with the Federation. The latter claims that some 200 agreements have so far been entered into. In a cable Mr. Naess warns that the proposed boycott would constitute a clear case of flag discrimination, represent an entry by the Federation into the field of foreign policy, and a challenge to international relations and to governments themselves which could not "fail to provoke counteraction of the most serious nature." American owners of tankers, ore ships and dry cargo tramps, he states, are not eligible for operating differential subsidy from the U.S. Government. With high American costs they cannot operate their ships under the American flag in competition with foreign flag ships. While operation under the above-mentioned flags may be a convenience to European owners it is to American owners a necessity if they are to continue to exist. The vessels controlled by the American committee, it is said, offer standards of wages and conditions in every way at least equal to those of European maritime nations.

New "Pendennis Castle"

NOW handed over by Harland and Wolff, Limited, from its Belfast yard, the 28,600-ton R.M.S. *Pendennis Castle*, a new passenger liner for the Union-Castle Mail Steamship Co., Limited, takes the place of the *Arundel Castle* on the weekly mail run from Southampton to South African ports, and will be the largest and most powerful of the eight fine ships which are engaged on this service. It is due at Southampton on December 1 and will sail from there on its maiden voyage to South Africa on New Year's Day. The *Pendennis Castle* has first-class passenger accommodation for 167 passengers in single- and two-berth rooms, a large proportion of the rooms having private bathrooms. Nearly all the first-class accommodation is in porthole cabins, but the few inside cabins are fully air conditioned. The tourist class accommodation provides for 475 passengers in two-, three- and four-berth rooms.

West Country Port Reawakes

AFTER disuse for nearly a quarter of a century, the port of Combwich, near Bridgwater in Somerset, was officially opened on November 13 when 240 tons of equipment were unloaded for the nearby Hinkley Point power station. One of the first tasks of the English Electric—Babcock and Wilcox—Taylor Woodrow Atomic Power Group, building the station, the world's largest (500 mW), for the Central Electricity Generating Board, was to rebuild the old port, so that 30,000 tons of plant and equipment can be shipped from Glasgow and the north in the next two years. The inaugural shipment from Glasgow on the m.v. *Seatern*, 604 tons, managed by James Fisher and Sons, Limited, included parts for a 400-ton 250-ft. high Goliath crane, to be assembled on site. There will be cargoes at weekly intervals over the next two years. The port has been rehabilitated at a cost of over £250,000 to obviate awkward road journeys with heavy plant.

Broadside from Niarchos Group

IN a statement issued last week in Hamburg the Niarchos group (which is stated not to have concluded any agreements with the International Transport Workers' Federation) announced that it intended to fight the impending boycott by the I.T.W.F. of ships sailing under flags of convenience. The statement said that those ships of the Niarchos group flying the Panamanian and Liberian flags operate under contracts corresponding to the maritime unions of the countries from which their crews are drawn. It conforms in every respect to the standard pay scales of the maritime unions in each country of hire.

Any action to boycott Niarchos ships under the completely false pretext of "sub-standard pay, living or safety conditions," or any attempt to discriminate against the registry of these ships, will be fought with all available means. These means include legal action in the courts of any country where such incidents should occur, as well as the protracted laying up of ships so involved. Recent court decisions in various countries have reaffirmed that boycotts of the kind proposed are illegal and subject to claims for damages, says the statement. It concludes with the threat that the group will rearrange the distribution of its very considerable annual ship maintenance and repair programme, as well as its long-range shipbuilding programme, to conform with treatment accorded its vessels in the various world ports. Mr. Stavros Niarchos has revived with the Bethlehem yard at Quincy, Mass., his order for a 106,500-ton tanker which was postponed several months ago.

★

FINANCIAL RESULTS

NOTES on the trading results, dividends and financial provisions of companies associated with the transport industry are contained in this feature, together with details of share issues, acquisitions and company formations or reorganisations.

S. Smith and Sons (England)

For the year ended August 2, 1958, S. Smith and Sons (England), Limited, earned group net profit of £3,382,306 (£2,847,193), after tax £1,631,146 (£1,277,616). Ordinary share dividend for the year is 10 per cent (same), together with a 2½ per cent interim for 1958-59.

Dennis Brothers

The directors of Dennis Brothers, Limited, recommend a final dividend of 5 per cent, making with the interim dividend of 5 per cent a total of 10 per cent for the year 1957-58. Profits for the year were £66,736 (£65,554) including £540 (£11,150) reserve for taxation no longer required. Tax took £66,000 (£63,500), profits tax £20,500 (£25,000). Carry forward is £410,956 (£387,416). The directors have also declared a first interim for the current financial year of 2½ per cent.

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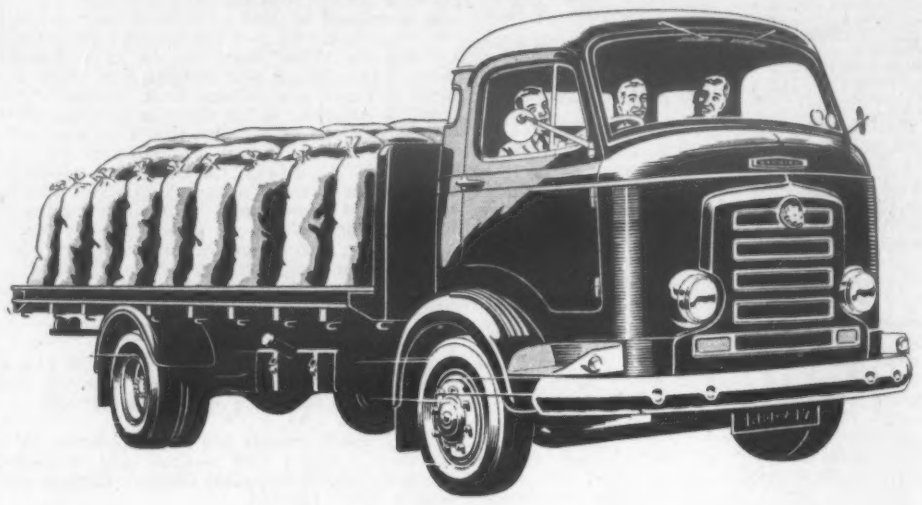

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★ New Karrier medium diesel engine, a six-cylinder o.h.v. 'underfloor' unit with an unequalled power/weight ratio, develops 87 b.h.p.
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★ Outstanding economy is combined with smoothness, ample power, and easy starting.
★ Alternative chrome bore petrol engine, the world-renowned Karrier six-cylinder o.h.v. 'underfloor' unit develops 91 b.h.p.
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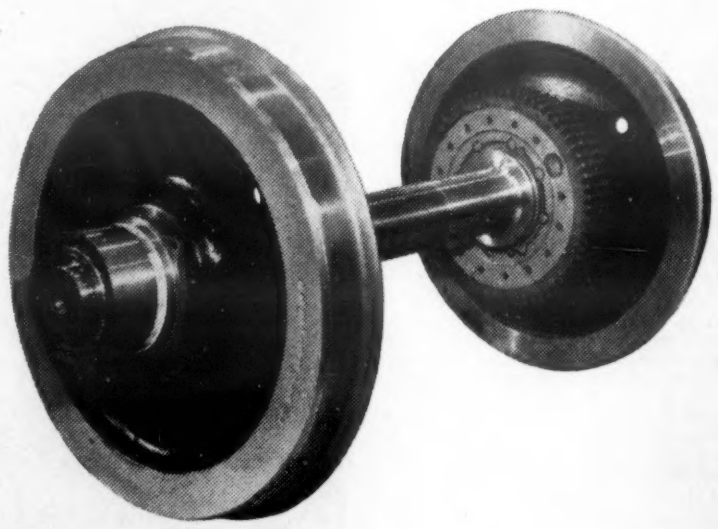

RAILWAY WHEELS, AXLES, TYRES, SPRINGS, FORGINGS

As one of the principal makers of steel railway materials in the Commonwealth, Steel, Peech & Tozer are playing an important part in the modernization schemes of British Railways and of railways overseas. Of their total production of 100,000 tons per annum of railway materials—steel wheels, axles, tyres, springs and forgings, and finished wheel and axle sets produced at the adjoining plant of Owen & Dyson Limited—some 30,000 tons are exported to railways in five continents. Seventy years' manufacturing experience and a constant search for new methods ensure the reliability and excellence of these materials.

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